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INTRODUCTORY ECONOMICS

BY

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FOR NON-RESIDENTS

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PREFACE

IN a democratic State economic science should be for the many, not for the few. The science is admittedly a difficult one; and until a royal road through its domains has been found, there is ample justification for the publication of a new text-book on economics, for the many excellent manuals now before the American public have not reached all classes nor met all needs. It has appeared to the writer that an economics text-book of moderate dimensions, dealing with only the more fundamental problems of the science, and written, so far as this is possible, in the language of every-day life, would prove useful to at least a limited class of students, and especially to those students of mature mind who seek to gain an introduction to modern economic thought, but who are not in a position to avail themselves of the advantages of class-room instruction. What students of this class—as well as many other students—most need is not a compendium of economic facts nor even an exhaustive treatment of economic principles, but a series of rigorous exercises in economic reasoning which will enable them better to organize the mass of practical economic knowledge that their daily experience affords.

The distinctive character of modern economic theory consists chiefly in its method of applying the principles of diminishing utility and diminishing returns. The student who is thoroughly familiar with these two principles, and who is trained to recognize their operation in practically every economic problem, will be able to follow the reasoning of the most profound of the modern economists, provided, of course, that this reasoning is not rendered unintelligible by a special terminology. But it is not alone as an introduction to economic theory that training in the use of these two principles is of vital importance. Most, if not all, of

the problems of practical economic policy involve one or both of these principles. The writer is persuaded that by far the greater proportion of the fallacies that vitiate popular reasoning on economic subjects originate in disregard of these principles. His aim in the theoretical part of the work has therefore been to present rather a series of studies throwing into relief the operation of these principles than an exhaustive treatment of the topics discussed. This method involves the exclusion of many topics that are ordinarily presented in an introductory treatise; it involves, further, a degree of repetition that can be justified only if it attains its purpose in making the student thoroughly conversant with the laws of diminishing utility and diminishing returns.

The teacher of economics will observe that very little use has been made of the terminology of the Austrian school. This does not imply that the writer regards that terminology as useless; on the contrary, he believes that in the development of some such special terminology lies the hope of substantial progress in economic theory. It seems, however, unfair to the student to cumber the pages that he is to read with unfamiliar terms, the mastery of which will avail him little unless he is to devote himself to advanced theoretical study.

It will further be observed that no attempt is made to group the chapters of this manual in "Parts" or "Books." The traditional fourfold division of the science is not suited to a theory which explains distribution in terms of production and makes frequent use of the concept value in its discussion of production. The division of the science into Statics and Dynamics, proposed by the author's friend and former teacher, Professor John B. Clark, while doubtless of great value in a work which is complete in itself, is too important an innovation to be conveniently employed in a book of a purely introductory character.

It is perhaps superfluous for the author to mention the

names of the economists to whom he is especially indebted, since such indebtedness will be readily recognized in his pages. The theory of value presented is in large part derived from that of Professor von Wieser; the theories of wages and interest follow closely those of Professor Clark. The treatment of rent and capitalization is largely influenced by the writings of Professor Felter and Professor Seligman. In his discussion of monopoly value the author has made free use of the writings of Professors Marshall, Clark and Ely; in his discussion of diminishing returns he has borrowed liberally from Professors Marshall and Carver. The discussion of banking follows that of the late Professor Dunbar; the discussions of money and international trade follow the accepted classical models.

Lincoln, Nebraska,

ALVIN SAUNDERS JOHNSON.

December, 1907.

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CHAPTER I

THE NATURE AND SIGNIFICANCE OF ECONOMIC SCIENCE

From the earliest time of which we have any record a great part of the activities of man has been occupied with the production or acquisition of wealth—material objects and personal services upon the possession of which human welfare depends, or seems to depend. In the long ages of savagery and barbarism primitive man was engaged in a ceaseless struggle with nature for the bare means of existence—food, clothing, and shelter. Limited as were the supplies of nature, a savage tribe never for a long time enjoyed them in peace; other tribes coveted the hunting grounds, or the bays where shellfish abounded; the rich pastures or the groves of fruit-bearing trees. Hence the difficulty of obtaining from nature the means of subsistence was aggravated by constant warfare between tribe and tribe. A struggle for mere existence against nature and against hostile tribes—such was the life of primitive man.

From century to century, however, man learned to equip himself better for the struggle for existence. Tools, at first rudely wrought from stone, later from the metals, greatly increased his productive power. A yet greater step in advance was made when animals were domesticated, and a certain and steady food supply took the place of the precarious products of the chase. The cultivation of roots and grains that had in their wild state yielded scanty returns to the gatherer marked another stage of progress. Methods were crude, and the tasks of pastoral and agricultural life exceedingly laborious—a condition which gave rise to the enslaving of captives taken in war. With the increase in the

productive power of a tribe, at least limited classes were freed from the struggle for the merest necessities. A leisure class, using the term in a restricted sense, appeared; and with it the germ of culture and civilization. Thus productive power and civilization have advanced hand in hand, until to-day, in the most progressive societies, there are comparatively few whose days are altogether devoted to a quest for food and shelter.

Although civilized man is for the most part liberated from the dangers of starvation and of death through exposure to storm and winter cold, his desire for the material objects and human services that constitute wealth is in no way relaxed. Merely to possess food sufficient to satisfy hunger does not content him; the food must be pleasing to the palate as well as nutritious. Warm clothing is an excellent thing; but civilized man demands that his clothes be of good appearance as well as comfortable. A sod house on the prairie is constructed with no great amount of labor and almost no expense; in such a house one may defy the worst storms of winter and the hottest winds of summer. Yet the modern dweller on the plains would scorn to live in such an abode; his home must present an appearance of comfort and prosperity. To stand well with one's fellows is to most men hardly less important than life itself, and in all human history an important factor in winning and retaining the esteem of others has been the possession of proper attire and other personal appointments. There is a standard of wealth consumption which each little group of associates in society are under some sort of compulsion to attain. If my neighbors and boyhood playmates all have fine houses, I cannot enter my humble dwelling without a sense of inferiority. If they are well fed and well dressed and well housed, I would be as good as they are. If they are wise or learned or cultured, I naturally strive to emulate them in this respect. But one cannot be well clad or well housed, one cannot very well even be wise or learned or cultured,

unless one can command a fair amount of wealth, an amount far in excess of the bare needs of existence. Under modern conditions wealth has become a means—though, of course, not the only means—to most of the things which one can desire. And as it is not in the nature of man to be content for any long time with what he possesses and what he has attained, it is inevitable that his desire for wealth, which is so potent a means for further attainment, should continue unabated.

This desire for wealth is what is meant by the economic motive. It necessarily plays a large part in the lives of most men. It animates the purest and most unselfish as well as the most sordid. For the desire for wealth is a desire for means to ends, and these may be good or evil. The philanthropist who wishes to found a home for invalid children must have wealth, just as the voluptuary who desires a palace of all delights to please his jaded senses. The economic motive animates both; very likely the philanthropist desires wealth the more ardently. What differentiates the two is the end which the wealth is meant to subserve. To assert, then, that all men are in great measure actuated by economic motives is not to assert that all men are selfish or sordid. It is merely to assert that wealth has been placed between man and the satisfaction of most of his desires; that as he seeks to attain any end whatsoever, he will seek to possess the means to that end.

Economics is the science which deals with such of the activities of man as spring out of the economic motive. It treats of the creation, acquisition, and use of wealth. The subject-matter for economic science, therefore, is to be found in every society—as well in the most primitive tribe as in the most advanced nation. Yet the facts of economic life have only recently been worked up into a systematic body of knowledge. For the beginnings of the science it is not necessary to go back more than three centuries, although fragmentary treatment of economic questions may be found

in earlier writings. How can we explain this late development of the study of facts with which humanity has from the earliest time been concerned?

Throughout the periods of savagery and barbarism men lived in small groups, which produced, through the chase, agriculture, and pasturage, practically everything that the members of the group consumed. Whether the group prospered or fared ill depended upon the weather, the fertility of the soil, the quantity and character of game, the relation to other groups—whether tribute was given or received. Within the group the relative welfare of each member depended to a certain extent upon his own prowess and efficiency; perhaps to a greater extent upon the tribal customs in accordance with which the common products of the group were distributed among its members. As conditions varied widely among different peoples, a general science of tribal economics would have been difficult to create. In the civilized states of antiquity a somewhat similar condition rendered the rise of economic science impossible. Industry was based on slavery; the lord of landed estates produced by slave labor almost everything that was needed on the estate. His welfare depended upon the amount and fertility of the land he possessed; the number of his slaves and his skill in managing them; the state of the weather, and freedom from hostile invasion. No systematic body of knowledge explaining the economic life of the people as a whole was developed, because there could scarcely be said to be an economic life of the people apart from that of the separate families. So, also, in the mediæval villages. They were self-sufficing; the welfare of the community depended upon natural forces and the energy of the members of the community and their capacity for co-operation. Each individual depended for his welfare partly upon the same conditions, partly upon village custom in the apportionment of services and rewards.

With the rise of modern trade a significant change took

place in economic life. In greater and greater measure men engaged in production for distant markets, instead of for their own use. Under such conditions welfare depended not only upon the producer's energy and success in the creation of goods. It depended also in large measure upon the price of the goods which were sent to market. The transition from production for one's own use to production for the market took place at various times in different countries and in different industries. In some branches of production it is only recently that the change has been effected. Thus the production of bread, formerly almost everywhere carried on in the household for consumption there, has in the cities become an independent branch of industry, carried on for supplying a market, just as the production of shoes, cloth or iron.

The striking characteristic of modern economic life, then, is that men produce goods not for their own use, but for the market. The employee in a shoe factory will very probably never wear any of the shoes he helps to produce; if the maker of clothes ever works on garments for himself, this is the exception to the rule of his daily labor. The farmer consumes little, if any, of the wheat which he raises; the woolgrower rarely spins and works up into cloth for his own use the product of his flocks. The modern economic system is therefore called an exchange economy, for it is through exchange of goods that each man gets the commodities which he needs. And with the rise of the exchange economy a new set of laws of wealth and welfare have come into operation. The welfare of a farmer under modern conditions depends in some degree upon his own energy and intelligence, and in some degree upon the weather. But in a very large degree it depends upon the price at which he can sell his products. A high price of iron brings prosperity to all the classes engaged in the production of iron, as a low price involves them in loss and distress. And so with practically all members of modern

society; their welfare is bound up with the prices of products.

A farmer or a manufacturer is popularly said to "put a price" upon his products. In the majority of cases, however, what the seller really does is to make a choice between selling at a given price or keeping his goods unsold. Except in rare cases there is a market price for goods which the buyers and sellers must accept if they desire to engage in business at all, and over this price no single person has any control. Yet prices do not exist apart from the action of men; they are the creation of man in society. Many persons, each acting with a view to his own interest, offer wheat for sale; many persons stand ready to buy it. The price of wheat is fixed as a result of the offers and purchases of all persons who buy or sell wheat. It is therefore a social phenomenon—the creation of all society, or of a large part of it. And so it is with almost all prices. They are set by society. Hence the laws of price are properly called the laws of social economics, or of political economy.

While each man produced goods for his own use, the tools and appliances which he used were of necessity simple. To cut enough wood for one's own use did not require a very expensive axe; to furnish boards for one's own dwelling required only a handsaw, to be worked by two men. Spinning wheels and looms were likewise of the simplest make. These tools and appliances could be made by the workman himself, or secured through exchange at small sacrifice. Accordingly the laborer as a rule owned the implements he worked with. In early modern times, although production for the market had become fairly common, the means of production still remained in the worker's hands. The increasing demand for products, however, soon led to the introduction of more expensive tools, and at last to the invention of machinery. Every step in this direction made it more difficult for the worker to provide himself with the means of production. So these had to be supplied by per-

sons of wealth—capitalists. Under present conditions manufacturing industry in almost all its branches requires so large an expenditure for equipment that no single laborer can work with his own tools and machines; nor is it possible for a group of laborers to equip themselves for production through combining their small savings. The capital outlay for a mill employing a hundred workmen is usually far in excess of what a hundred workmen can accumulate. Industry must therefore be conducted by wage laborers and employer-capitalists. To a certain extent the employer and the capitalist have been further differentiated, the former borrowing capital from the latter at a fixed rate of interest. When the products are sold, whatever remains after paying wages and interest is a profit, the reward of the employer, or, as he is generally called, the entrepreneur or enterpriser.

Under modern conditions, as we have seen, the prosperity of each industry as a whole depends largely upon the prices of its products. Within each industry the prosperity of each laborer, capitalist or employer depends in great degree upon the way in which the total product of the industry is divided. And here again we encounter social laws. There is a general rate of wages, which the laborer must accept if he wishes employment. In the same way, there is a general rate of interest. No one man exercises any appreciable influence in fixing these rates; they are the resultant of the actions of all those who have labor to sell or capital to lend, on the one hand, and on the other hand, of those who desire to hire laborers or to borrow capital.

The prices of goods, the wages of labor, the rate of interest on capital, elude the control of any single individual. May they not, however, be controlled by combinations of individuals, or by the action of a sovereign state? Within limits this is possible. A trade union may force up the rate of wages; a protective tariff may enhance the prices of many classes of goods. But there are limits beyond which combination and political action are unavailing—limits which

are set by social forces. What these forces are, how they operate, how far they can be controlled, and with what results for society as a whole—these are the problems which social economics endeavors to solve.

Social economics as a distinct science may be said to have taken its rise in studies concerning taxation and public finance. In early modern times the expenditures of government in most European states were steadily increasing. The various princes vied with one another in the splendor of their palaces and in the number and brilliancy of their personal following; the cost of maintaining the tranquillity of the nation at home and its dignity and influence in foreign lands became heavier from decade to decade. More than all, methods of warfare by land and by sea were changing, and military success was coming to depend quite as much upon the size of the war chest as upon the valor of the soldiers. These new expenditures could be met only through taxation; accordingly, it became a very practical matter for the statesman to devise means for increasing the prosperity of a nation in order to increase its capacity for paying taxes. As the precious metals seemed to be the most convenient and the most reliable form of wealth, it was the aim of the statesman to provide these in abundance. European countries, having no important mines of silver and gold, could secure these metals only through foreign trade. Hence the kernel of early modern economic policy was the regulation of foreign trade, with a view to bringing into a nation large supplies of treasure. These regulations formed a system which in the end became burdensome in the extreme; their futility and injuriousness were exposed in the latter half of the eighteenth century by the *Economistes* in France and by Adam Smith in Great Britain, whose writings first placed economics on a scientific basis. Through the nineteenth century economic discussion has progressed from one practical problem to another—money and banking, trade unionism, socialism, monopoly, etc. The chief function of the

science is still, as in its earliest period, to ascertain what economic policy of government will be most conducive to the general welfare. Although it is known as the "science of wealth," it is no part of the function of economics to instruct individuals how they may best acquire wealth. Its principal aim has been attained when it has thrown all possible light upon the economic problems which a state, and its members as citizens of a state, have to solve.

We have seen that under modern conditions the welfare of industries, and of individuals engaged in those industries, is largely determined by the social forces of price. The influence of price extends even further. In large measure the same social forces determine what each of us shall do; they fix one's place of residence as well as his occupation. If the price of glass is high, and remains high for a considerable period of time, high profits and high wages are possible in the glass industry. New establishments will be opened; boys and young men who otherwise would have engaged in other industries become glass blowers. By fixing a high price on glass, society, as it were, decrees that more persons and more capital shall be devoted to that industry. If coal or other sources of power are exceptionally cheap in a given locality, if conditions of transportation are exceptionally favorable, large profits may be made by manufacturers in that locality; they increase their investments and new capital flows in from less favored districts. A city is built, and the population that was formerly scattered in hamlets and country is under a sort of compulsion to congregate there. Why are our cities becoming greater and greater? The social laws of price decree it. If we would understand just why modern society presents a given form, our inquiry must take into account, as perhaps the most important factor, these laws of price.

Since the fixing of prices is a work in which all, or most of society co-operates, whatever affects any industry, for good or evil, must react in some manner upon all society.

A dry year in India, with consequent shortage of crops, affects not only the Hindoo ryot, but also the British workman, the farmer in Dakota or in Argentina. Large crops in the West, concurrent with high prices, exert a powerful influence, not only upon the interests of the local merchants, bankers and mechanics, but upon the manufacturing and financial interests of the entire country. The railways are prosperous, having an immense amount of transportation work to perform, and their stockholders receive large dividends, out of which they may improve their homes, or increase their investments in factories or what not, in every case creating a new demand for labor and extending prosperity in ever widening circles to the remotest industrial classes in the land. A part of the surplus earnings of the railways may be turned to the extension of lines into new territory; to the double tracking of congested single lines; to the installation of new equipment, with the immediate result of an increased demand upon the rail mills and car works, and all the enterprises subsidiary to these. A crop failure, on the other hand, may disarrange the entire industrial mechanism and bring distress to the laborers and capitalists apparently farthest removed from the immediate cause of the disturbance.

An excellent example of the influences set in motion by a great economic event is given by Mr. David A. Wells in his *Recent Economic Changes*. In the year 1869 the Suez Canal was opened. Up to that time trade with the East Indies was carried on in sailing vessels, which rounded Cape Horn or the Cape of Good Hope with an expenditure of time of three to eight months. A large fleet was necessary to carry on this trade, and this consisted of sailing vessels, since it was impossible for the steamships of the time to make so long a voyage with the coal which they could carry. Because of the uncertainties attending so circuitous a voyage, and because of the risk of war, vast stores of Indian and Chinese products were kept on hand in England, the

natural emporium for this trade. There arose in England a great warehousing system, and a parallel development of banking, the warehouse receipts serving as excellent security for banking loans. After the opening of the canal, most of the commerce with the Indies passed through the Mediterranean. In this sea, and more especially in the Red Sea, the sailing ship was practically useless. Hence a great number of steamships were constructed, and an amount of sailing shipping of about two million tons was virtually destroyed. Ships that formerly would have done service for years rotted in the wharves; others were sold at far less than cost to be used in other branches of trade. Persons whose property consisted in sailing vessels of any kind suffered heavy losses. Towns along the seacoast that had been engaged in building sailing ships saw their prosperity wane. Captains and trained seamen who had been employed on the East India ships were forced to seek other employment. As the new method of transporting goods was relatively quick and certain, there was no longer any need for keeping anywhere in Europe large stores of India goods. Moreover, goods destined for consumption in the Mediterranean countries, and even in Central Europe, were no longer conveyed to England and thence distributed, but were landed at various Mediterranean ports. The warehousing system, accordingly, fell into decay so far as this branch of the trade was concerned, and the banking houses which had depended upon the warehousing business were involved in losses. On the other hand, the increasing demand for steamships brought prosperity to the towns where such ships were built, and to the laborers who were fitted for the work of steamship construction.

Such were some of the immediate effects. No less important were the remoter ones. It was found that a vessel constructed of wood did not well withstand the vibrations of the engines; hence the iron, and later the steel, ship took its place. So long as ships were built of wood there were

few countries better fitted for shipbuilding than the United States. Iron and steel were, however, far dearer in the United States than in England; moreover, American laborers did not quickly acquire the skill necessary for the successful construction of iron ships. Accordingly, the American merchant marine was forced to give way before the British. American enterprise was diverted to other channels, and has not yet returned to the sea.

The same event hastened the development of steam navigation, with consequent cheapening of freight rates, in the trade between Europe and America, and this helped to enable the American farmer to flood the European markets with his produce. This greatly increased the prosperity of America; it gave cheaper food to the British factory hand, and in less degree cheapened food supplies in Continental countries. The European farmer, on the other hand, was forced to take lower prices for his products. In England, where American competition was keenest, the agricultural districts were involved in a depression from which they have not yet recovered.

It would be superfluous to multiply examples to show the close interdependence of parts in the mechanism of economic society. What affects one part of the economic organism must inevitably affect other parts. And this it is that renders it difficult to devise plans for obviating the economic evils which remain in spite of the progress of civilization. Through legislation it may be comparatively easy to restore to vigor a decaying industry, and bring comfort and wealth to those engaged in it. But the effects of legislation of this nature will not be bounded by the industry which it is sought to aid. Suppose that we are moved to action by the decay of the old ship-building cities, which once sent vessels to every important port in the world, but which now are compelled to seek a precarious sustenance from the entertainment of summer boarders; by the shipyards closed month after month; by the efficient seamen forced to do odds and

ends of work ashore. It would be possible, through lavish grants from the public treasury, to make the ship-building industry pay. We should see a great industry spring up; we should have the gratification of knowing that the American flag might be seen on every sea—very good things in themselves. What we might not see, but what would be none the less real, would be a sacrifice imposed upon each farmer and miner and mechanic in the way of taxation necessary to meet the drain upon the public treasury.

Most of us have at some time speculated upon the apparent injustice in the distribution of rewards and services under the existing economic system. Is it right that the unskilled laborers, whose hours are long, and whose toil is hard and uninteresting, should receive only the smallest pittance, while the successful lawyer or architect receives a princely income for work that may afford him the greatest pleasure? Many able thinkers have utterly condemned the existing economic system because of this inequality of rewards; they would substitute a plan of sharing which would give to each according to the time spent or according to the degree of exertion. Certainly, this would increase the welfare of many who now have far too little; it might not seriously injure those who have more than is necessary for comfortable existence. Yet could such a change be made without setting in motion influences which in the end would leave the rich poor and the poor more wretched than they now are? The question is one that cannot be answered without a thorough study of the laws governing the production and distribution of wealth under modern conditions.

It is now clear why economic study, though of recent origin, is prosecuted with more zeal than almost any other department of science. It is concerned with one of the most vital of all subjects—the general welfare. Without economic science the existing constitution of society cannot be understood; unless based upon an adequate understanding of

economic laws, attempts at practical reform of admitted evils are likely to do more harm than good.

By what method are we to proceed in order to arrive at an understanding of economic laws? Not by systematic experimentation, as in other sciences, for when human welfare is concerned, experiments extensive enough to be of value are not to be thought of. Not by an investigation of the facts of history, for present conditions differ so widely from those of earlier periods that past experience throws doubtful light upon the problems of to-day. Moreover, history records what is seen; but what is not seen, but still exists, is a no less important part of economic life.

The essential phenomena to be explained are prices—prices paid for commodities, for labor, for the use of capital. Now, if we can grasp the forces that are at work determining prices, we must make some progress, at any rate, toward an understanding of the laws governing modern industry. Shall our method then be to study prices as they actually exist? Unfortunately, while a study of the markets will show whether prices are rising or falling, it will not show what forces determine prices in general. Some other method of approach to the problem must therefore be found.

Although no individual exercises a controlling influence over price, yet prices, we know, result from the actions of individuals. When I buy a loaf of bread, I take the price as I find it, yet by my action I contribute an infinitesimal part to the sustaining or increasing of the price of bread, and with it, the price of wheat. Thus we all contribute to the determination of prices. And much as we may differ from one another in other respects, in our economic conduct we are much alike. Practically every one seeks to obtain for his money the largest possible amount of gratification. Practically every one seeks to sell his labor for the highest wage he can obtain, and to secure the highest possible rate of interest on his capital. Exceptions occur, it is true. There are those who have fixed ideas as to fair prices and fair

wages, who refuse to accept either more or less than what accords with their standards. But these exceptions are so rare as to be negligible. In business life, as a general rule, each man acts with a view to his own best interests. The problem, then, is to discover the principles underlying economic conduct—how our desires arise and develop, how they are limited, how they are compelled to adapt themselves to the conditions of external nature. In this study we have a key to the actions of other men in our own motives.

Though each man seeks to buy as cheaply as possible and to sell at the highest possible price, he soon learns that there are other men who desire to buy or sell like products or services. That is, he encounters competition. And where competition exists one cannot follow his own desires in fixing the prices upon commodities which he has for sale or wishes to buy. He must meet the low prices of competing sellers by equally low prices, or abandon the field to them. If he hopes to buy, he must make his offer as good as those of competing buyers. Competition is not everywhere present; but in the great majority of business transactions prices are fixed with some reference to it. A monopoly may control the whole supply of meat. The monopolistic seller need not fear that meat will be offered by competitors at a lower price. Yet if he fixes his prices too high, intending purchasers will supply a part of their need for food with other products. The seller of cereals and vegetables is in a sense a competitor of the meat monopoly.

We may, then, assume that under existing conditions prices are fixed through the concurrent action of buyers and sellers, each of whom seeks to increase his wealth and the resulting gratification at the least possible expenditure to himself. We may also assume that the fixing of prices takes place under conditions of competition in the widest sense of the term. With these assumptions we may proceed to an examination of the process by which the individual and society arrive at the prices of commodities.

CHAPTER II

UTILITY, VALUE AND PRICE

Man is distinguished from all other living creatures by the number and complexity of his needs. The lowest savage requires better shelter and more varied and nutritious food than his next of kin in the animal world. And the higher man rises in the scale of civilization, the more numerous and complex are his needs.

Corresponding roughly with man's needs are his wants or desires. From his general need for nutrition springs his want for particular kinds of food, and for anything that may help him to secure these—weapons, tools, etc. His need for warmth and protection against storm gives rise to a want for a hut or a cave, and for furs and skins and whatever else may serve as clothing. Under primitive conditions it was only through coöperation with his fellows that a man could procure adequate means of subsistence and could protect himself against his natural enemies; moreover, without the society of his fellows he would have been miserable. Next to the needs for the means of physical existence then, man needed whatever would win him the approval and admiration of his fellows. Hence arose wants for objects of personal adornment and the like. Finally, various puzzling experiences created in him the belief that his life was subject to the influence of unseen beings, whose favor he needed to gain; therefore he developed a want for things which he believed would propitiate such beings.

Thus from the earliest time man has desired objects which would satisfy his physical, social and spiritual needs. In general, the same classification of wants or desires holds to-day. But in the evolution of wants the clear distinc-

tions of earlier conditions have become somewhat obscured. Leaving aside the want for objects ministering to spiritual needs—as in a sense beyond the realm of economics—it is plain that most physical wants have a social element, as most social wants have a physical element. The want for food is of course predominantly physical; yet most of us demand that in its quality and preparation it shall conform to the standards of the society in which we live. The want for jewelry was at first almost purely social; it remains predominantly so. But in the progress of time man has developed a strong sense of personal satisfaction in gold and gems—he desires them perhaps more for their mere beauty than for the envy and admiration they excite—and this esthetic element may in many cases quite supplant the original social element.

Every concrete want of man is capable of complete satisfaction. But the different wants vary widely in their insistency and in the ease with which they may be entirely satisfied. The want for bread, for instance, is extremely insistent, yet easily satisfied. I must have bread, but I would not care to have even a petty baker's entire supply. Such a want is known in economics as an inelastic one. The people of the United States require a fairly determinate quantity of wheat for food, and this quantity they will strive to secure even at great sacrifice. Much more than this, however, would not be wanted at all, unless of course it could be sold in other lands, or some use other than the supplying of food could be found for it. On the other hand, the want for some classes of things is very hard to satisfy at all, although it is not absolutely essential that the want be satisfied. I can get on very well without possessing paintings; but I should like to have all there are in the Louvre. The people of the United States may live comfortably without having many art galleries; but it is almost inconceivable that they could have too many. Such wants, then, are elastic.

As the examples given indicate, it is as a rule the wants for objects satisfying physical needs that are inelastic, and the wants arising out of social needs that are elastic. The wants for so-called necessities are inelastic; for luxuries, elastic. Civilization tends to develop the wants for objects satisfying social needs, and for luxuries of all kinds. Hence it may be said that the higher a people stands in the scale of civilization, the farther it is from the complete satisfaction of all its wants.

Every man wants enough food to keep him alive; a quantity sufficient for this purpose he desires intensely. An equal additional quantity will keep him in good condition; this quantity he desires only less intensely. Give him more food; it may still please his palate, and satisfy a want. But a point is soon reached where the man wants no more food at all.

So the want for a suit of clothes is hardly less insistent than the want for food enough for life. A second suit of clothes will be highly desired, even if of identical quality, as it may be worn when the first is soaked with rain or otherwise out of condition for wear. A third suit of the same kind would not be desired very intensely; a fourth, or at any rate a fifth or sixth, would be a superfluity. But if it is possible to vary the quality, the want becomes far more expansive. The social element becomes predominant; the man would dress at least as well as men in the social group to which he belongs, or of which he desires to become a member. Yet a point is eventually reached where neither increase in quantity nor improvement in quality is desired.

It may then be stated, as one of the general laws of human nature, that each want is capable of varying degrees of satisfaction, that with each increase in the means of satisfaction the desire for additional means grows less, until a point is reached where desire is no longer felt.

Whatever satisfies a want is a good, in economic terminology. Its power to satisfy wants is known as utility.

It is, of course, plain that nothing has utility in this sense unless it is wanted. Utility is strictly parallel with want; human want for a certain object endows it with utility; and the degree of utility is measured by the degree of want. Before men knew the use of iron, iron ore had no utility at all; with every advance in the art of metallurgy, the utility of iron ore has increased. In the days of Marco Polo, the only utility that existed in the petroleum of Asia Minor arose from its use "to anoint camels suffering from the mange"; now the progress of science and industry has endowed the same material with a very high utility.

Utility, it is to be borne in mind, is not usefulness. Opium prepared for smoking, being ardently desired by the victims of the opium habit, has a very high utility, in the economic sense; but it is the reverse of useful. As a rule, whatever is useful has utility, but there is no close correspondence between the degree of usefulness and the degree of utility.

We have seen that wants are capable of varying degrees of satisfaction. As utility is strictly parallel with want, concrete goods, satisfying the different degrees of want, have different degrees of utility. Three bushels of wheat may supply me with bread enough to sustain life through a year; the utility of these three bushels—supposing I have no other source of food supply—is exceedingly great; I want them as I want life and all that life contains. It would not be easy to fix an estimate upon this amount of utility, but let us call it 1,000 x . Another three bushels would enable me to keep in fairly good physical condition; but their utility to me is evidently less; perhaps it would be 100 x . Another three bushels might mean overfeeding; yet some persons are desirous of being overfed; hence I may still desire these three bushels, and thus endow them with utility, which may possibly be measured by 10 x . With another three bushels I might feed a cat and a dog; it would

give me pleasure to have these as pets; therefore I should desire the additional supply of wheat, and it might represent a utility of $5x$. An additional three bushels I could probably not use in any way giving me satisfaction. They would have no utility for me at all.

Suppose that I find a particularly beautiful sea-shell. As it seems beautiful to me, it has utility to me. The amount of utility to me may equal $10y$. Another shell will not be so much of an acquisition, but I shall still desire it. Its utility may perhaps be $9y$. Additional ones will give me less pleasure, but as the want for things of beauty is hard to satisfy, I may still experience a desire for a hundredth or a thousandth shell, and these would have some utility for me. There is, however, a point beyond which additional shells would merely cumber my premises; they would then have no utility.

These examples assume, of course, that I do not undergo a change while I am acquiring these goods. If repeated examination of the sea-shell inspires me with an increasing sense of its perfection of form, I may desire a second even more than I desired the first. Its utility will be greater than that of the first originally was. But not greater than the utility of a first shell would be in my present state.

So one's first experience of classical music may be less enjoyable than his second experience of the same kind of music. He has, in the meantime, become a more cultured person. But assuming that no opportunity for development in taste is permitted, the pleasure derived from the first hour of listening to good music will be greater than that derived from a second hour of equally good music. The utility of the second hour of music is less. And so we may accept it as a general rule that the utility of a unit of any kind of good diminishes as the number of such units in one's possession increases.

In the foregoing examples it has been assumed that

the quantity of the goods increased until no desire for further units existed. Most of the things which we desire are not to be had in superfluous quantities. Instead of having five units, each consisting of three bushels of wheat, let us assume that I have but three. The third unit would still have a utility of $10x$. As this is the utility of the last or final or marginal part of my supply, it is called final or marginal utility. Suppose that I have only ten sea-shells, and that the utility of the tenth is $5y$. In economic language $5y$ is the final or marginal utility of sea-shells. Final utility, it is clear, is a very variable quantity; if the desire for a good increases, with no increase in the number of units of the good, final utility increases; if the desire remains the same, but the number of units of the good diminishes, final utility again increases. In the first example, if the third unit of wheat were destroyed, the marginal utility of wheat would at once become $100x$.

Conversely, marginal utility diminishes with decrease in want or increase in number of units. I might tire of collecting sea-shells, or the waves might wash up a wagon-load of them. In either case the marginal utility would shrink—perhaps to zero.

But does any man really arrange his wheat or other goods in series of units and say to himself: "This unit is worth $1000x$; without it I should starve; this unit is worth $100x$, as my comfort and strength depend upon it; this unit is worth $5x$, for if I did not have it I should be compelled to do without my pets"? Not at all; the different units are just alike, and one is thought of as just as desirable as another. For practical purposes, the utility of one unit is the same as that of another. Let us suppose that there are four units of wheat, and that the last has a utility of $5x$. What is lost if any one of the four units is lost? Simply $5x$. What sacrifice would one make to prevent the loss of any unit, even the one which would have been used to sustain life, and by itself was worth $1000w$? A sacrifice

not greater than $5x$. For if any other unit is lost, the least important one will be substituted for it, and the effective loss will be properly placed at $5x$.

The utility of the last and least important unit, then, exercises an important influence in determining what utility one will in effect ascribe to any unit. For practical purposes the utility of any unit is exactly equal to that of the least important one. The utility of a unit, thus measured by that of the least important one, is called "effective utility."

If the total number of units of a good is so great that the last one has no utility, the good has no effective utility at all. No one would do anything to prevent the destruction of part of his supply; no one would give anything to increase his supply. Thus water, although a single gallon would have indefinitely great utility, if this were the only gallon available, is in most places so abundant that the last units of the supply have no utility. Therefore no unit has effective utility.

Anything which a man can acquire or hold possession of, which is capable of satisfying a desire, and the available quantity of which is so limited that every portion of it has effective utility, is an economic good. To possess any such thing is an object worth incurring sacrifice for; and no one will be ready to suffer deprivation of it. All such goods constitute wealth.

Economic goods may be classified according as they satisfy wants immediately or indirectly. Bread, clothing, dwelling houses and the like minister directly to wants; they exist only for direct use, or "consumption"; they are therefore spoken of as consumer's goods. Tools, machines, raw material, land and the like serve as means to the production of goods having the quality of direct utility. They are accordingly known as producer's goods. Under modern conditions the distinction is hard to draw, because through exchange goods destined for immediate consumption may be used indirectly to procure other goods. Thus

the baker's loaves are not consumer's goods to him, but means for procuring whatever he may wish to consume. All material goods used either as materials or instruments of production, or as means of acquisition through exchange, are classed as capital goods.

In order to direct one's economic activities intelligently, it is important to know how the effective utility of one kind of goods compares with that of another. Suppose that a cultivator can produce, with the expenditure of one day's labor, two bushels of potatoes or one bushel of wheat. Should he spend his time in producing wheat, or potatoes, or both? If the effective utility of two bushels of potatoes is greater than that of a bushel of wheat, the rational thing is for him to produce more potatoes and to spend less time producing wheat. According to the law of diminishing utility, the effective utility of potatoes will decline as their quantity increases; at the same time, that of wheat will increase, as our example assumes that labor formerly occupied in wheat production is diverted to the raising of potatoes. A point will probably be reached where a day's labor will produce as much utility in one branch of agriculture as in the other; and until this point is reached, the cultivator has it in his power to increase his welfare simply by making a more rational distribution of his labor.

But before one can rationally distribute his labor or other resources, he must have a definite notion of the relative effective utilities of goods. He must measure the utility of one—the degree to which it seems desirable to him—in terms of the utility of the other; or he must measure them both by a common standard. And this, of course, is easy to do. Think of any two objects. Which seems the more desirable? That one has the greater utility for you. How far would one walk in order to get good No. 1? If he would walk twice as far to get good No. 2, the latter has twice the effective utility of the former. Any good, or any sacrifice, may serve thus as a standard for measuring the com-

parative utilities of goods. Under existing economic conditions, of course, the standard which most readily occurs to one is money. If one wishes to compare the utilities of wheat and potatoes, he naturally considers how much money he would give for a bushel of either.

Now, the effective utility of a commodity, compared with that of some other commodity, or compared with some sacrifice which serves as a standard, is value. Value is effective utility measured. And as effective utility is constantly fluctuating with changes in the amount of a good, or in the desire for it, value is also always fluctuating.

We often hear of the "real" value of a thing, or of the "intrinsic" value, as if there were some kind of value resident in a thing apart from man's desire for it. Of course, there can be no such thing. The value of a thing to any person is its importance at a given time and place.

Values will naturally be different for different persons. What is the value of my grandfather's watch? To me, it may be equal to that of \$1,000. Perhaps you would not give \$10 for such an antiquated timepiece. In less extreme degree the same things holds of every good. Some will place a high value upon an object; others a low value; and the one is as properly the true or intrinsic value as the other.

But is there not a certain scale of values in which most persons agree, and has not this general value a claim to the title "true value"? There is indeed something like a scale of values established, as it were, by common consent; and the economic activities of each seem directed toward making his own scale of values conform to that of society. How this social scale of values arises out of the purely personal values just described, it will be our next task to consider. It is of course self-evident that the social value does so arise. One can not conceive of society as such discovering values, and imparting them to individuals.

Utility, as we have seen, is a quality with which an ob-

ject is endowed by virtue of a human want. This want may arise out of physical or out of social need. If a particular social need should disappear or change, certain of our wants would disappear or change. Certain classes of goods, destined to satisfy such wants, would lose their value, or undergo some change in it. There was a time when gentlemen clipped their own hair and covered their heads with wigs. To move in polite society, one had to follow this, as other customs. Hence there was a want for wigs, and these were endowed with effective utility and value accordingly. As the fashion of wearing one's own hair came into vogue, this particular kind of wig ceased to have either utility or value. Now it is clear enough that the great majority of those who followed the earlier custom could have had no personal need nor want for a wig. They derived the want from their associates. The custom, I suppose, originated with some bald-headed prince, who really needed a wig. And so it was transmitted from the court to the gentry, and persisted long after the reason for its existence had disappeared. The value of wigs thus arose from a personal need; it attained vogue through imitation, and by a similar process, faded out and disappeared.

Suppose that I attend an auction of the effects of an eccentric gentleman, who has led a solitary life collecting odds and ends of all kinds, among them some things of value. I find a painting that pleases me. I know nothing of art, and all that the painting represents to me is a group of dull, brutish persons, making unnecessarily hard work out of some simple agricultural operation. What is its value to me? It would be difficult to say; certainly in my own mind the value is something very tentative. But finding that the picture can be had for no great sum, I resolve to buy it. I hang my acquisition in an inconspicuous place, for I am not sure whether I should be proud of it or ashamed of it. A friend who knows something of art calls upon me. Perhaps he takes merely a glance at the picture and says nothing. Its

value to me shrinks to zero. But if he cries enthusiastically, "Ah! a Millet!" immediately its value for me expands in an extraordinary fashion; what had been scarcely a valuable object at all becomes a priceless treasure.

Here then is one reason why values for different persons tend to conform to the same scale. If I find that most of my friends think that a riding horse is dear at \$300, I think so, too, although I might get more satisfaction out of the horse than they. Value is thus in large measure a matter of imitation. But before one can imitate, there must be something original to serve as a center of imitation; and in the matter of values, this must be the original personal value of some, arising out of effective utility to them.

Moreover, though imitation brings about a certain uniformity in the scales of values of different persons, it can not of itself make them absolutely alike. If most of my friends think that a particular horse is worth \$200, I certainly would not value it at \$300, unless indeed I am a connoisseur in horseflesh and my friends are not. But I think the horse is cheap at \$200, while my friends think it is dear. And this shows that in spite of all tendency to conform, I retain a scale of values that is peculiarly my own.

So long as men lived in self-sufficing groups, producing whatever they needed for their own use, there was no other force than imitation which could make the personal valuations of one group correspond with those of another. But in an exchange economy a much more potent force making for the socialization of values exists.

Suppose that two farmers, with adjoining fields, both grow potatoes and wheat. Farmer A may consider that a bushel of wheat is worth two bushels of potatoes; Farmer B may consider a bushel of potatoes worth two bushels of wheat. Of course, such a divergence could exist only in case the two farmers were so far from a market that they could exchange their products only with each other.

Assuming such divergence, however, the natural result would be, not that they would debate the relative justice of their views of value, but that they would trade. Farmer A could afford to offer Farmer B two bushels of potatoes for a bushel of wheat; Farmer B could afford to accept even a half bushel of potatoes for a bushel of wheat. Exactly how much A would at first offer, we can not say, nor is that of much importance. What is certain is that he can, and probably will, offer terms that will be acceptable to B, and some bushels will be exchanged.

Now, as A parts with some of his potatoes, the effective utility, and with it the value, of potatoes to him increases. As he gets more wheat, the effective utility of wheat declines. And the reverse will be the case with B, who is increasing his stock of potatoes and diminishing his stock of wheat. It may still be worth while for the two farmers to exchange more bushels; but it is not so much worth while as it was at first. In the end, exchange must cease, for each will value wheat in terms of potatoes exactly as the other does.

Perhaps Farmer A has land that is very well adapted to potato production, while Farmer B's land is best fitted for the growing of wheat. In another year A will have a superfluity of potatoes and B of wheat, and the process of exchange will again be necessary to equalize values. So in a developed economic system the value of wheat as measured in some commodity universally possessed, in regions where it is produced, tends continually to fall below the value of it in regions where little wheat is grown; and this it is that keeps up a constant exchange between distant regions. And this constant exchange, in turn, tends to eliminate the discrepancies in values.

Returning to the case of the two neighbors, perhaps one has a cow which he does not care to keep, but the other would like to have; while the latter has a harrow which he does not need, but the former could well use. Possibly A

values the cow at twenty bushels of wheat and the harrow at thirty; while B values the cow at thirty bushels of wheat and the harrow at twenty. Here is a good opportunity for a trade. Either one might give the other a certain number of bushels of wheat "to boot," in order to bring about the trade. At what terms will the exchange be made? We can not tell. Nor will the exchange, at whatever terms, affect the relative values placed upon cows and harrows by either party to the exchange. It would be different if more cows and harrows were to be exchanged. In that case the scales of values of the two exchanges would tend to uniformity, as was the case with the potatoes and wheat. But very likely no further exchanges are to be made. So I may be able to buy for \$25 a coat that I would regard as cheap at \$50. Another coat at \$25, however, might not seem worth more to me than \$20; accordingly I refrain from buying it. Hence the coat which I do buy retains a personal value for me in excess of the value placed upon it by the seller. It is a value that as a whole refuses to be socialized. A similar state of affairs exists wherever one buys single goods, not quantities of like units, as in the case of wheat.

In the examples that have been used in the last section it was assumed that both parties to the exchange had personal values, arising out of his own wants, for both commodities exchanged. This may have been the usual case under primitive conditions; but now, when we produce almost exclusively for sale, the seller of a commodity must fix a personal value in some other way. I may be a dealer in ladies' shoes. It is safe to say that for my personal use they have no value whatsoever. Yet when a prospective customer appears, I have just as definite a value, below which I would not sell the shoes, as I should have if I were trading off a pair of shoes that I might use myself. Whence do I derive this value? I know that if I do not sell shoes to this particular buyer, I shall probably be able to sell them to some

one else. And I will take no less for them than I think some one else will pay. If experience shows me that few persons will pay the price, I must alter my personal value, or the fashions will change, and I shall have a stock of unsaleable leather on my hands.

Now it must be plain that this kind of personal value is entirely a secondary phenomenon. It is derived from the estimate of other men's personal values, arising from personal needs. It has its importance; but it does not explain the values that are actually placed upon goods. This explanation lies in the facts of direct personal valuation.

Personal values, as we have seen, naturally vary widely with different individuals. We need not believe that any two persons would affix exactly the same valuation upon a particular horse. One man might value the horse, for his personal use, at \$500; another at \$50. Yet we find that for a certain grade of horses there is something like a uniform value in terms of money—or price. Perhaps this money value, or price, is \$250. In that case the personal values of \$50 and \$500 are both ignored. They have no influence upon the price actually set.

Personally I should abhor the idea of ballooning. If I were to place a value upon balloons for my own use, it would be far less than nothing. Clearly my personal value of balloons has nothing to do with their price, which for a given grade may be \$5,000. If I had a mild interest in this form of sport I might value a balloon at \$1,000; yet I should not influence their price. Were I so passionately fond of ballooning, and so plentifully provided with money, as to value a balloon at \$100,000, this valuation would nevertheless be incapable of raising the price of balloons much if any above \$5,000. It is clear, then, that some personal values count, and some do not, in the determination of prices as they are fixed in the market.

To show just what it is that determines what personal values shall count in fixing market prices, we may employ a

somewhat tedious and artificial example which is the common property of modern text-books in economics. Let us imagine a horse market, in which there are six persons with horses to sell, and six persons each of whom would like to buy a horse. We will assume that the horses are as alike as peas, so that each buyer would as willingly have one as another. Of course each buyer desires to buy as cheaply as possible, and each seller desires the highest possible price for his horse. Each buyer has in his own mind a top price—the most he would pay under any circumstances—and each seller has a bottom price, below which he would absolutely refuse to go. Being rational men, the buyers carefully refrain from letting their top prices be known; and in the same way the sellers keep their lowest prices a close secret. We shall assume the fiction writer's omniscience, and set down the top and bottom prices of the buyers and sellers respectively, as follows:

Buyers		Sellers	
A	\$100	M	\$90
B	90	N	80
C	80	O	70
D	70	P	60
E	60	Q	50
F	50	R	40

How many horses will be sold, and at what price? Of course if each of the buyers in the first column were shut up in a stall with the seller in the opposite column, all the horses would be sold, and at different prices. But we are assuming that all are in an open yard, and hear one another's bids and offers. Under these circumstances no buyer will pay more than another, nor will one seller take less for his horse than another. What price will actually be fixed can be seen by following out in detail the probable action of these buyers and sellers,

Suppose A, a buyer, offers \$40 as his first bid. R could afford to take it; but as any of the other five buyers would be glad to get a horse at that price, they each offer a little more than \$40. Competition for this horse goes on until the price is raised to \$50. At this point two horses may be had; but there are six competing buyers, and the price goes higher. Thereupon F, who will pay no more than \$50, drops out. He can exercise no more influence in determining the price of these horses than I can in determining the price of balloons. Bidding goes on, and the price is forced up to \$60. Three horses are to be had at this price; but there are still five buyers the price goes above \$60, and E drops out. At last the price reaches \$70. There are now four sellers willing to part with their horses at this price; and four buyers willing to pay the price. Imagine that bidding goes on, and the price rises to \$71. D would then drop out, and four horses would be offered, with only three buyers. Any one of the four sellers would rather sell at \$70 than have his horse unsold; bidding among the sellers, therefore, forces the price back to \$70. Under the conditions this price represents an equilibrium between the values of the buyers and those of the sellers.

Let us imagine, however, that before the sale is actually effected, another buyer, with a maximum valuation of \$110, appears. The price will then be forced above \$70, and D will drop out. It will not reach \$80, however, for then five sellers will compete to meet the needs of four buyers. The actual price will be fixed somewhere between \$70 and \$80. If an additional seller, with a valuation of \$30, were to appear, the number of buyers remaining the same, the price will drop below \$70, but not quite to \$60.

Where competition exists, then, the price will be fixed at such a point that all that is offered at a given price will be taken at that price. If we define as demand the aggregate of offers of money for a commodity at a given price, and as supply the aggregate of the commodity offered at the same

price, we may say that price is fixed at the point where demand and supply are equal.

At a given time the aggregate demands for wheat at \$2 a bushel may extend to one million bushels; but the sellers of wheat may be willing to place on the market two million bushels at that price. Manifestly \$2 a bushel cannot be the price set by the market, for the owners of the second million bushels, not finding purchasers, will offer it for less. At a lower price, some sellers will drop out, and some additional purchasers will appear. At \$1.50 a bushel, perhaps fifteen hundred thousand bushels will be offered, and the same amount taken. \$1.50 is then the price that will actually be set.

Now, not a single buyer pays more for the wheat than its effective utility to him, measured in terms of money. Some pay less than they would be willing to pay. These have a personal value which does not correspond with market value, and which has only an indirect influence in determining it. On the side of the buyers the personal values that count most are those of the purchasers who find it just worth while to buy. For these are ready to drop out at any increase in price, and so tend to hold it at a given point. These buyers are known in economics as the marginal buyers. On the sellers' side, the personal values that count most are those of the sellers who find it just worth while to remain in the market, since with a fall in price, these would drop out.

Yet while it is the buyers and sellers who are just ready to drop out with changes in price—the marginal buyers and sellers—who at a given time hold the price where it is, price changes may take place in spite of them, through changes in the wants of many purchasers, or through the appearance of new sellers. The introduction of the automobile resulted in a new demand for gasoline, and as a consequence the price rose, eliminating the purchasers who had before been in a price-determining position. If alcohol should be suc-

cessfully substituted for gasoline for the same purpose, the price of gasoline would fall and a new set of purchasers, who formerly had nothing to do with fixing its price, as they did not desire it enough to buy it, would come to occupy the position of controllers of the price.

In existing conditions we do not find ourselves in the presence of unpriced goods upon which a price is to be placed. Everything that one wishes to buy already bears a price; one accepts the price, or refrains from purchasing. I compare my personal value of anything—say a hat—with the value of the commodity in the market. If I decide that a hat is worth more than \$5 to me, I purchase it if it is to be had at that price. Parting with some of my money, each dollar I have is worth more to me; and hats are worth less. Thus I make my personal value approximate that of the market. If I am a seller of hats, and I find that \$5 are worth more to me than a hat, I willingly part with the hat at that price. Having more dollars, one is worth less to me; having fewer hats, I am not so anxious to part with one. Thus by buying and selling one makes his personal values conform more nearly to that of the market. At the same time, by taking a hat from the seller, I reduce by a trifle the number to be sold to other purchasers; I make the hat sellers less anxious to sell, and contribute of my puny strength to draw up the general level of value of hats to my own personal value. So all of us who are purchasers are joining our efforts to raise prices to a high level, although what we desire is low prices; and all of us who are sellers are exerting our combined strength to pull them down, although we are anxious to have high prices. Those of us who are least anxious to buy or to sell exercise an equalizing function; when the buyers' side prevails, and prices are rising, the least willing buyers drop out; and similarly with the least willing sellers, when the sellers succeed in pulling prices down.

Of course if there is an increase in the number of buy-

ers, or if the wants of existing buyers are intensified, then the buyers will be successful in raising prices. On the other hand, if the number of sellers, or the amount which each can sell, increases, the sellers prevail in the price contest, and draw the price down. Now it is very difficult to describe the influences that increase the number of buyers, or the intensity of their desires. But it is easier to describe the influences determining the number of sellers and the amount they will sell. If for any reason the price of wheat should rise to \$2 a bushel, we can predict with absolute certainty that the number of sellers will go on increasing until the price comes down. \$2 for wheat is therefore an abnormal, or unnatural, price. On the other hand, if the price were fifty cents a bushel, we may count with certainty that in time sellers will drop out, and the price will rise. Fifty cents is an abnormal price, just as \$2 is. Between the two prices must somewhere be one that is normal or natural. The market price will be constantly rising above or falling below it; yet there will always be an increase of sellers when the price is above the normal, and a diminution in the number of sellers when the price is below the normal; consequently the price will fluctuate about this point, never remaining long much above or much below it. The next chapter will show what forces fix the normal price, or, to use a nearly equivalent term, normal value, under conditions of competition.

CHAPTER III

NORMAL PRICE

At the close of the last chapter it was indicated that although market prices are continually fluctuating, they nevertheless tend to rise or fall toward a certain point, which may be called the normal or natural price. A particular fabric comes into vogue; everybody must have it, and as there is not an indefinite amount of it, its price rises. Perhaps it was worth \$1 a yard before fashion touched it with its magic wand; the price may easily become \$5. Now, is this price one that is likely to continue—even supposing that the fashion should be transformed into a custom, and the enlarged demand for the fabric should thus become permanent? Would it be safe for one to buy large stocks of this cloth, with the expectation of selling them at \$5 a yard? Would it be wise for one to put up a mill for the manufacture of this kind of goods, with the expectation that the high price would continue? There are conceivable conditions under which one might prudently do these things; but in most cases it would be very bad business. Most probably, the price would sink again toward the \$1 mark. In all likelihood \$1 is about what that fabric will sell for in the long run.

So it is with the great majority of the commodities sold on the market. Their prices may at any time double; but in all probability this will be a transient phenomenon. If anything is sold at an extremely low price—a price that has rarely been known before—most probably this also is a transient phenomenon. And just as it would be bad business to buy large stocks, or build factories, in anticipation of the continuance of excessively high prices, so it would be folly to quit a business, or sell out all one's stock, because

of excessively low ones. The business man who is most likely to succeed is the one who has a due appreciation of normal price and who directs his business, so far as it is concerned with a more or less distant future, in accordance with its laws. Normal price, therefore, is a phenomenon of the greatest practical importance. And in so far as it determines the direction of the productive forces of society, it is of the highest importance to the student of economics, as well as to the man of affairs. This is true even though actual prices may at any given time be above or below the normal, and may perhaps never remain for an appreciable time at precisely the normal level.

The supply of most commodities may in some measure be increased or diminished at the will of the producers. Many producers are in a position to increase their output by slightly enlarging their working force, or by running overtime. Some producers are engaged in the manufacture of a number of different commodities, or of grades of one kind of commodity. By discontinuing the production of some of these and concentrating their energies on a single one, they are able to exert an appreciable influence upon supply. Moreover, there are always some persons who are in doubt whether or not they shall enter upon a certain line of production; still others, now engaged in that line of production, who are in doubt whether or not they shall go out of business.

When the price of a given commodity is very high, factories producing that commodity run on full time, or overtime; factories that would otherwise have produced several other commodities turn all their energies in this direction; manufacturers who were in doubt as to whether or not they should go on producing, find their doubt stilled; and new producers are lured into the industry. And this makes for an increased supply and a falling price. How long will the expansion of business continue?

(The two factors determining the business conduct of a

producer are price and cost of production.) In the cost of production are included the value of materials used up and the wear and tear and general depreciation of machinery, buildings, lands; interest on all capital used, whether borrowed, or owned by the producer; wages of all labor, whether hired or that of the producer himself; premiums to insurance companies for the assumption of the risk of destruction of buildings and stock; taxes, water rates, etc. If the price of a commodity exceeds its cost, including in the term all the above-named elements, the supply of the commodity can be profitably increased. If the price just equals cost, there is no sufficient reason for either increasing or diminishing the supply. If the price is less than cost, the supply will diminish.

Suppose that it costs an average manufacturer \$1 to produce a yard of woolen cloth. If he can sell it for \$1, he will probably go on producing about as much this month as he did last. For this price enables him to pay his operatives, to pay interest on capital borrowed, to pay taxes and insurance premiums, etc. It also affords him as much of a reward for his labor of management as he could get if he placed his services at another manufacturer's disposal; and as large a return on his own capital as he could get from any other equally safe investment. But suppose the price rises to \$1.10. For every yard he can sell he gets ten cents over and above all costs. This amount we shall call a net profit. Of course he will desire to sell as many yards as possible. He will work his mill to its fullest capacity; if he has looms that are pretty well worn out, he makes haste to replace them with more efficient machinery; if he has been contemplating the erection of an annex to his mill, he pushes the work forward as rapidly as he can. Every other manufacturer in his line does the same. And in time the increased supply of the fabric forces the price down, until it reaches \$1, where the manufacturer no longer has any reason for increasing operations. Possibly

the price goes still lower and reaches ninety cents. This does not pay all costs, but the manufacturer may still continue to produce, as it may be better for him to pocket his loss than to let the mill stand idle. But it is plain that he will curtail operations wherever he can. He will discharge his least efficient workmen, and discontinue the use of the least efficient machines. Every other manufacturer, in greater or less degree, is doing likewise. So the supply falls away and the price rises toward \$1. This, then, is the normal price—a price that just covers cost of production, using the term cost of production so as to include all the items enumerated above.

If the price of a commodity exceeds cost, then, forces are set in motion which tend to bring the price back to the cost level. Now, no producer wishes to sell at cost; every producer desires an excess above cost, and the greater the excess, the better he likes it. If a manufacturer can produce a certain fabric at a total cost of \$1, and can sell it at \$1.10, he enjoys a very comfortable net profit; and the same thing is true of all other manufacturers in the same line. And they might continue to secure this net profit if each one would but refrain from enlarging his output. There is, then, something illogical in the conduct of the several producers, viewed in a certain way. Each of them is anxious to get as large a sum of net profit as possible; but the result of their action is that nobody long continues to get any net profit at all.

The reason for this is that there are too many of them for any one to have a perceptible influence over price. Suppose our manufacturer increases his output 100 per cent. Probably this would not reduce the price one-fiftieth of a cent a yard. Therefore he obtains nearly twice as large a sum of net profit as he would have done if he had kept his output unchanged in volume. The temptation to increase his output, then, is very strong; it is strengthened by the fact that he knows that every one of the other thousand pro-

ducers is subject to the same temptation; some will yield to it; then others, finally all. And those who yield first will be the ones who will get the greatest sum of profit. Under the circumstances, the best thing for the manufacturer to do is to yield to the temptation the moment it offers.

And this is what must inevitably occur where competition exists—where each producer may increase his output if he desires to do so. However much it may be against the interests of all the members of a group of producers to increase operations, it is to the interest of each one to increase his own operations, if the price of his products exceeds their total cost.

Often, in American history, have different classes of producers planned a universal curtailment of production, in order to force prices above cost level and hold them there. At one time the producers of raw petroleum, at another time the producers of wheat, at still another time the producers of cotton, have beguiled themselves with such plans. If each cotton producer would plant ten per cent. less ground next year, the price of cotton would probably rise twenty per cent., and every producer would get more money for less labor. Perhaps the cotton producers may make a general agreement to this effect. Well, every producer who violated his agreement, and doubled his acreage, would get the benefit of the high price, and the additional benefit from an unusually large quantity to sell. Each producer, having his own interest at heart, and suspecting the integrity of the motives of others, would be under the strongest temptation to increase his output. Some would refrain from doing so; but enough would increase their acreage to keep cotton very near to cost price.

But let us suppose that the cotton producers were able to bind themselves legally to diminish production, ten, twenty, fifty per cent., or that some Cræsus should buy up all the cotton lands and fix production at the figure which seemed most profitable to him. In either case, prices would

cease to hover about cost of production. They would be such as always to afford a net profit. Such prices, in contrast with normal or competitive prices, are called monopoly prices. They are controlled by laws, but these laws are quite different from those which prevail in competitive industry. To state the law of monopoly price will be the chief purpose of the next chapter.

It is clear that the only reason why the value of a commodity tends to equal its cost of production is the automatic increase or decrease of supply when price temporarily swerves away from cost. It has already been pointed out that through combination such an increase in supply as will reduce prices to cost of production may be prevented. If for any other reason supply is unable to change, the price of a commodity may remain permanently high, or permanently low. Let us assume that a certain country has only one armor plate works, and owing to a deficiency in the public revenues would prefer to cease strengthening its navy rather than pay a price for armor plate corresponding to cost of production. The cost to the armor plate manufacturer may perhaps be divided into the following elements: Interest on capital invested in buildings and lands, fifty per cent.; cost of raw material, fuel, etc., twenty-five per cent.; wages of labor employed, twenty-five per cent. The price offered for armor plate, let us assume, is sixty per cent. of the total cost. This price will cover the cost of materials, labor, etc., and will yield in addition one-fifth of the normal return on the capital invested in buildings, machinery, land. If the owner of the plate works refuses to take orders for plate, he will have to close down his works; in that case he will secure no return on his capital at all. Clearly, it will pay him better to continue production.

But suppose the price offered for armor plate is only forty per cent. of its cost. In that case, if the owner of the works is paying his men exactly what they could get in other industries, and is paying merely the market price for his raw

materials and fuel, he will have to close down his works. For by continuing operations he would lose not only interest on his fixed capital, but would also incur a net loss on every dollar he paid out for labor or for materials.

Conversely, if a period of financial prosperity should enable the nation to enter upon an ambitious naval programme, the price of armor plate might rise considerably above cost of production without inducing any one to put additional capital into such an industry, from which it could not easily be withdrawn in case prices should fall. As supply would not increase, therefore, price might long remain above the level of cost of production.

When a street railway line is constructed, it is expected that the receipts from fares will cover all costs of operation, together with interest on all capital expended in constructing the line. Possibly the traffic will be so much less than was anticipated that the receipts will do little more than cover costs of operation, leaving hardly any return for the capital sunk in the road. This capital cannot, however, be removed to a more lucrative enterprise. To raise fares, even if this were permitted by the charter of the company, might still further discourage traffic and reduce net receipts. The street railway line will therefore be compelled to operate at a loss, preferring a small return on fixed capital to none at all. On the other hand, if the receipts are far in excess of cost, including under that head interest on fixed capital as well as operating expenses, it will still be impossible for other capitalists to construct another line on the same street, and so reduce fares to the cost level through competition.

Similarly, it cannot be said that there is any tendency for railway freight and passenger charges to approximate cost of production. For the most part, such charges are governed by other laws than those of normal price.

The laws of normal price operate wherever supply automatically increases or diminishes with increase or decline of price. And this is particularly the case with common manu-

factures. In a manufacturing industry there may be 1,000 mills producing the same grade of goods and selling them in a common market at a uniform price. Fifty of these mills become so dilapidated each year, through age, that they are dismantled; fifty mills of equal capacity must be put up each year in order to maintain a constant supply of goods. If prices are so low that not all costs of production are covered, no new mills are erected to take the place of those which are abandoned, and a part of the supply fails. If prices are above cost, instead of fifty new mills, there may be 100, and the increased supply tends to draw prices back toward the cost level.

In the case of agricultural products much the same thing is true. If the price of wheat is high this year, more land will probably be prepared for the wheat crop of next year. Of course, if the price has been low for a series of years preceding, it may be assumed that it is only some chance occurrence that has raised the price—a famine in India or in Russia, a foreign war, or some other transitory cause. In that case the prudent farmer will hesitate about applying an undue share of his energies to wheat production. The supply of wheat, for the next year, may not be materially increased; and owing to a similar unanticipated cause, may sell at an abnormally high price. Abnormally low prices in any year may be ascribed, by most farmers, to transient causes, and may lead to no decrease in acreage. Thus, for a period of years the products of agriculture may respond very sluggishly to the influences of price.

Again, it is possible that the high price of wheat during a period of years may lead to an unduly great expansion of the wheat growing area. As a consequence, so much wheat may be grown that for another period of years the price will be abnormally low—too low to compensate the farmer for his costs. And thus it is not impossible that the price of a commodity may constantly be alternating between an abnormally high level and an abnormally low one. Yet the

high price must in the end bring about a reaction, just as the low price must do so. And for this reason we may call such prices abnormal, as contrasted with a theoretical price which would not show a tendency to be followed by a reaction in either direction.

It is often impossible to tell exactly what it costs to produce a particular commodity. Some commodities are invariably produced together, as beef and hides, cotton and cotton seed, wool and mutton. In most great industries, it is found possible to make use of parts of the raw material that are ordinarily regarded as waste. Thus, in the refining of petroleum, besides the main product, kerosene, a host of by-products—gasolene, lubricants, tars, dyes, etc.—are produced. How much does it cost to produce these? Nobody can tell. They could not be produced at all, in commercial quantities, were it not for the immense capital engaged primarily in the production of kerosene. Part of the cost of the use of that capital ought to be counted as cost of by-products. But it is not possible to say how great that part should be. No one can say how much it costs to produce hides, or cotton seed, or wool. In such cases, there is of course an ascertainable cost, and hence a definite normal value, of live cattle, of sheep, of unginned cotton, of petroleum products as a whole. If the price of beef, added to the price of hides, is more than reasonable compensation for the cost of raising cattle, the business of cattle raising tends to expand. And so with other cases of joint products.

Where the cost of a particular commodity is ascertainable, and any one is free to enter upon its production, the price constantly tends toward the level of cost. Cost, then, may be said to determine normal value. It is, however, to be borne in mind that cost itself is something variable and fluctuating. Cost of production in any industry is greater for some producers than for others. A given grade of cotton goods may be produced either in Rhode Island or in North Carolina. It may cost an average of ten cents a yard in

Rhode Island, and nine cents a yard in North Carolina. Some Rhode Island factories are better than others; perhaps the cost of producing the cloth is eight cents in the best factories and twelve cents in the worst equipped ones. And similar gradations may exist in North Carolina. So when we say that normal price is fixed by cost of production, exactly what do we mean? Average cost? Greatest cost? Least cost?

It may be supposed that a factory which produces at a cost of eight cents will run on full time, and with full working force, if the price is $8\frac{1}{2}$ cents. If the price is ten or twelve cents, it can do no more, unless it can be expanded by the erection of an annex. Let us suppose that it would take a year to construct such an annex and get it into working order. In the meantime the factory produces as much as it can when the price rises; but so it would have done if the price had not risen. So far as this factory is concerned, the rise in price does not immediately create an expansion of supply that reacts upon the price. This factory, then, cannot be said to be in a position to control prices.

But let us suppose that there are other factories which produce at a cost of nine, ten, eleven, twelve cents a yard. So long as the price remains at $8\frac{1}{2}$ cents, none of these, we may assume, will be in operation. As soon as the price rises to nine cents, the factories producing at that cost will open their doors, and by increasing the supply of goods, will tend to check further rise in prices. If prices rise nevertheless, the factories producing at a cost of ten cents will begin operations, and will exert their influence on supply and on price. When the price rises to twelve cents, it will be the factories producing at this cost that will tend to check a further rise in price. When the price is twelve cents, the costs of production of the better equipped mills—those producing at eight and one-half, nine, ten, and eleven cents—have little to do with the determining of price. If the price rose a little higher, or fell a little lower, these fac-

tories would continue to produce exactly as much as they do when the price remains at twelve cents. They do not, therefore, regulate the supply. This the twelve-cent mills do, since they are ready to drop out, and reduce supply, if the price falls.

It is not to be understood, however, that a manufacturer can say: "I produce at a cost of twelve cents; I must have at least that price," and so force the price up to twelve cents. If the market demands that manufacturer's contribution to the supply, it must pay twelve cents for every part of the supply. The manufacturer in the least favorable position cannot fix the price at his cost. He can only withhold what he might have supplied, and so bring to bear upon the market some small pressure, making for higher prices.

It is only in a restricted sense, then, that we can say that normal prices are fixed by cost of production. Those who produce at a cost of twelve cents, by their action in placing a product on the market or withholding it, make an attempt at holding the price at that point. Perhaps the task is too great for them; the price slips away; and those producing at a cost of eleven cents make an endeavor, by the same means, to hold prices at their cost level. They also may be unequal to the task, but at last the price rests in the hands of producers who are just able to hold it at their costs. We may think of these as being on the fringe or "margin" of production; they are often called, in economics, the marginal producers.

The price does not, however, rest permanently with the same marginal producers. Those producers whose costs are less than the price are continually reaping profits; they invest them in new mills, equally well equipped, and borrow capital further to increase their productive capacity. In time they greatly increase their output, and this tends to reduce the price of the commodity. The producers who are holding the price at their cost level find the burden growing heavier and heavier; soon the price breaks away from them al-

together, and is held for a time at the cost level of slightly more efficient producers. But the most efficient producers continue to enlarge their works; an increasing supply is thrown upon the market, and the price settles to a still lower level, where it equals cost to producers who formerly enjoyed a slight profit. In this way prices are continually gravitating toward the level of cost to the most efficient producers.

It may therefore be said that for a short period of time, price is determined by the costs of production of those who produce at the greatest expense, but whose contribution to the supply is necessary in order that the existing demand may be met. In the progress of time, however, such producers are unable to hold prices at their cost level, and are forced out of business. The final adjustment—if it should ever be attained—would leave price at the level of cost to the most efficient producers, all of whom would stand on a plane of equality as to costs.

This does not mean, however, that the price of a given commodity must continue to decrease. The cost itself may increase, for the more efficient as well as for the less efficient producers. As we have used the term, cost includes the value of raw materials and fuel; interest on capital, whether fixed in land, buildings, and machinery, or invested in raw materials, etc.; wages of all labor employed; and a number of lesser items—taxes, insurance premiums, etc. Now, every one of these elements in cost is perpetually fluctuating in magnitude according to its own peculiar laws. The sources of raw material may be approaching exhaustion; wages and interest may be rising; taxes may be growing heavier. But while such an increase in costs may prevent the more efficient factory from producing as cheaply as before, it burdens the less efficient proportionately. It cannot, then, prevent prices from tending toward costs to the most efficient producer.

CHAPTER IV

MONOPOLY PRICE

As has been shown in the preceding chapter, the mechanism which keeps prices hovering about cost of production consists in the automatic adjustment of supply and demand. If price rises, supply increases, and thus price is forced down again. If then the supply of a commodity can be controlled by the producers, the price is also within their control. With this control, the producers are in the happy situation where they can, within limits, enrich themselves at their pleasure. It is no wonder, then, that producers and dealers from very early times have sought to bring supply under control. Joseph controlled the total supply of grain in Egypt, we are told; he was thereby enabled to charge whatever prices he pleased; and the prices he fixed were such that he got in exchange for his grain all the possessions that the Egyptians had. In ancient and mediæval times, when roads were bad and the costs of carriage prohibitive, whoever should buy up the stock of grain in a town would practically make himself master of the town. He could measure out the grain in small quantities, charging whatever prices seemed good to him. Quite naturally, then, men desired to monopolize the necessities of life. There was great wealth to be gained in this manner. And quite as naturally, the townsmen, who were thus compelled to pay high prices, desired to hang the monopolists, or at least to put them in prison.

Monopolies we still have; and few of us have much love for them. But the monopolists of modern times cannot charge such exorbitant prices as their mediæval and ancient prototypes. The mightiest monopoly in the United States can draw to itself only a fraction of the wealth of the community. The prices which it can fix and the profits

which it can enjoy are strictly limited by economic laws, although the limitations are not so narrow, perhaps, as we should wish them to be.

Before considering what these laws are, we must examine the conditions under which monopoly may arise. One possible way has already been indicated. All the producers of a given commodity may agree among themselves not to sell below a certain price, or, what would amount to the same thing, not to produce more than an amount so small as to command scarcity prices. If the number of producers is small—say half a dozen—such an agreement might stand. No one could materially increase his sales without attracting attention; moreover, no one could increase his sales without an immediate effect on price. If the producers number millions, such an agreement would be empty words; almost any one could violate it without detection, and without any appreciable effect on price. And the number of violators of the agreement would be so great that no control of supply or of price could be exercised.

When the number of producers is small, then, there may be effective control of supply. But such control cannot long be retained unless new producers can be kept out of the field.

The producers of cotton yarn of the higher grades are not so very numerous. It is therefore conceivable that they might agree to limit supply and force the price to a point paying a "fair" profit. But it is not a very difficult matter to build and equip a mill to produce a given grade of cotton yarn. If then the price were forced to a high level, new producers would soon appear. These would enjoy the benefit of the high price, although to effect sales they would have to undercut the prices of the combine. The latter would have to reduce its prices; the new producers would then cut still lower, and so on until the price had reached cost of production. Indeed, the price would almost certainly go lower than this, for the number of producers, each striving

to get more customers, would have increased. The last state of the cotton yarn business, accordingly, would be far worse than its first. We have had in America not a few examples of attempted monopolies which in the end merely intensified competition.

If the industry in question requires a very high grade of skilled labor, and the members of the combine control the whole supply of labor of this grade, the monopoly may rest secure until new labor can be trained for the shops of would-be competitors. If the only satisfactory way of training such labor is through apprenticeship under men already working in the trade, it becomes difficult indeed for a competitor to get an independent supply of labor. This situation might become a serious one in some industries were it not for the fact that it is not easy for one set of employers permanently to control their workmen. The latter would know that at any time they could thwart their employers' schemes by accepting employment with competitors; and this knowledge would be made good use of, in forcing constantly higher wages. Where monopolies of this kind have arisen, they have generally been broken up on account of disputes between the employers and their workmen.

Some products depend upon supplies of raw material that are found in comparatively few parts of the earth, and in limited quantity. If a combination of producers can get possession of all or most of the mining or agricultural lands which are capable of yielding a certain product, they may win their desired freedom from the danger of new competitors. Anthracite coal, for example, is found in only a restricted area in the United States. A combination of capitalists of very great wealth might with comparative ease control the total output—and indeed, something of the kind now exists. Such a combination has nothing to fear from new competitors, although of course it must meet the competition of producers of other fuels.

Where a combination does not enjoy the ownership of

limited natural resources, it may yet attain much the same result through systematic intimidation of those who might desire to become competitors in its field. The combination may be very rich, and quite ready to lose money on some part of its sales whenever this may be necessary to stifle competition. Let us suppose that there is a combination of the more important producers of coal who yet have nothing like complete ownership of the coal lands. There may be a number of small competitors whose natural market is a city which we will call X. Other markets, we will assume, are so far distant that cost of transportation prohibits their supply from the mines of the small producers. The combine, on the other hand, may have mines from which it may supply the market X, as well as a host of mines supplying other cities. If then it desires to destroy the business of its small competitors, it may decide, for a while, to sell coal in X for less than the cost of raising it from the pit. This the combination can afford to do, because it is enjoying high profits from its monopolistic position in the supplying of other markets. Of course the small competitors can sell no coal at prices which will meet those of the combine; very soon they become discouraged and retire from business. Then the combine can raise prices of coal in X to a profit-yielding point. The small producers will probably not again attempt to compete, knowing that the same tactics will again be employed to destroy their business.

Of course, if coal were easy to transport, this method would prove very expensive to the monopolistic combination. An enterprising dealer in the town X, finding that the combination sold coal there at much lower prices than in town Y, might buy up coal in the former place and ship it to the latter. On every ton of coal sold in X, we have assumed, the combination is losing money; and every ton sold in Y helps to depress the price there, to the further disadvantage of the combine. In a sense, it would be underselling itself.

Accordingly, some other method of destroying competitors must be employed when the commodities which it is sought to monopolize are of little weight and bulk, as compared with their value, and hence easily transported. Suppose that a monopolistic combination controls most of the manufacture of cigars, and that an overbold outsider, anxious to share the benefits of high prices, enters the field. He may place on the market an excellent brand of cigars, charging for them less than the combine charges for similar ones. The combine cannot lower the prices of all cigars in the competitor's vicinity, for in that case dealers will buy them up and express them to all parts of the country; and thus the combine would be inflicting losses upon itself. But there is another method which it will find efficacious.

Let us say that the independent producer calls his brand of cigars the "Rex." It is his all; his fate is bound up with its fortune. The combine has 500 brands; it makes profits on all of them. Accordingly, it can afford to put out a new brand of cigars—say the "Regina"—for half the price of the Rex, though of as good quality, and place it on the market wherever the Rex is sold. Before long the Rex is no longer purchased; its producer goes out of business. Then the combine puts worse tobacco into the Regina, until at last, like all its other products, this cigar is dear at the price.*

Some businesses, by their very nature, tend to come under unified control. The supplying of gas to a city is of this character. A dozen competing companies, in a great city, would be an intolerable nuisance; besides, the cost of producing and distributing gas would be vastly increased by such competitive supply. A single street railway system, or a single telephone company, is much more convenient, and can operate more economically than competing businesses could do. A majority of the towns in the United States are

* For the above, and other methods employed by monopolistic combinations in keeping competitors out of the field, see Clark, *The Control of Trusts*, Ch. IV.

served by only one railway; and this is of course in the position of a monopoly. In most of the remaining cities there can never be more than three or four competing railways, at most; and these, by virtue of their small number and by virtue of the peculiarly disastrous effects of competition in the railway business upon the railways themselves—which we cannot in this place discuss—almost certainly operate under agreements as to charges. There is, then, a large field of modern business in which monopoly is natural; and in this entire field, barring the existence of statutes fixing prices and charges, the monopolist may fix his terms according to his own views of what is profitable to him.

A monopoly may also be created by law. In certain countries the manufacture of tobacco is monopolized by the state. Since no one can purchase from any other seller, the state can charge such prices for tobacco as will give a revenue to the treasury. A monopoly created by law may be given to a private individual. Once this was done for the benefit of royal favorites; but nowadays such a monopoly is given in return for some service to the public. A city may thus give a monopoly of the sale of refreshments in a public park; but the dealer is expected to pay for it, either in a lump sum, or in a percentage of his profits.

But the most common kind of monopoly created by law is the patent. Invent a new kind of machine, a new process of treating raw materials, a new kind of fuel or way of utilizing fuel. If the invention is really new, the government, in most modern countries, stands ready to protect you for a certain number of years in the exclusive enjoyment of it. If it is an article for sale, you may manufacture it and sell it for whatever you can get. You may sell your right, and the buyer proceeds to enjoy the monopoly. This monopoly is of the strongest; all the power of the state can be invoked to keep competitors out of the field.

The above are by no means all the possible ways by which monopoly control may be secured. They are only the

more common ways. Now it must be plain that there will be a great deal of monopoly in a society like our own. Combines exist; limited natural resources are controlled; devices for intimidation of possible competitors have reached a high degree of perfection; more and more businesses are developing into a state in which, like the manufacture of gas for a municipality, they are natural monopolies. Patents, also, were never more numerous; and as they often fall into the control of businesses having other sources of monopoly power, they are a potent cause of monopoly growth.

We may therefore expect to find in actual business, besides the branches in which prices are controlled by cost of production, other branches in which the producers have more or less power to hold prices above cost of production. This power varies from monopoly to monopoly, according as competitors are excluded by a strong means or by weak ones. It also varies according to laws which have only an indirect connection with competition.

Suppose that a monopoly has complete control of the salt that is to be sold in the United States. It may cost one cent a pound to produce it. At what price will the monopoly sell it? If the price is one cent, perhaps one billion pounds will be sold. If the price were raised to two cents, who would eat his food unsalted? Who would economize salt in the least? It is safe to say that there are few persons in the United States so poor that they would not go on eating as much salt as before. And the same thing would be true if the price were raised to five cents a pound—a price of which four-fifths would be monopoly profit.

But not all the salt is for table use; a large part of the total supply is used for live stock and for manufacturing purposes. If the price of salt rises, the use of it for these purposes will decline. When salt is very cheap many farmers scatter it on the ground for their cattle, or leave it in troughs with no shelter, where the weather devours more of it than do the cattle. High price would mean economy.

So, at two cents a pound, probably not more than 900,000,000 pounds will be used, instead of 1,000,000,000. At five cents a pound the amount taken might shrink to 800,000,000 pounds; at ten cents, to 700,000,000; at twenty, to 500,000,000. Were the price forced up to \$1 a pound, very likely great economy would be exercised even in the use of salt in human food. Perhaps not more than 80,000,000 pounds would be used.

Now, while the monopoly would make the enormous profit of ninety-nine cents a pound at the last-mentioned price, this would be a very irrational price for it to set. The total profit from the sale of salt would, according to our assumed volume of sales, be \$79,200,000. And this would be much better than selling 1,000,000,000 pounds at cost, or 900,000,000 at two cents. The latter price would yield just \$9,000,000 profit. At five cents the monopoly would get a profit of \$32,000,000; at ten cents, of \$63,000,000; at twenty cents, \$95,000,000. So twenty cents is really a more profitable price for the monopoly than \$1. At twenty-five cents, however, 400,000,000 pounds might be taken; and this would mean a profit aggregating \$96,000,000. This, then, is a still better price than twenty cents, from the monopolists' point of view. Let us suppose that at thirty cents 300,000,000 pounds will be taken. The profit at this price would amount to only \$87,000,000. The price, accordingly, is too high; and the best price for the monopolist lies between twenty-five and thirty cents.

Of course this would be an exorbitant price; and far more extortionate than any existing monopoly price. But given the conditions—a monopoly of salt—extortionate prices could be collected. One must have salt; he must have a certain amount of it. There is nothing in the world that can be substituted for it. And even if the price were exorbitant, it would form no very large item in any one's expenditure. No one would leave the country to escape the monopoly.

Let us suppose, now, that a monopoly has gained control of the entire supply of beef in the United States. Perhaps the cost price at which beef could be placed on the market is ten cents a pound. With beef at this price, the American people might conceivably eat 100 pounds per capita—8,000,000,000 pounds in round numbers. At eleven cents, some of the poorest people would cease eating beef and use mutton or pork instead, or use less meat of any kind. Perhaps the amount consumed would fall to 7,000,000,000 pounds. That would give the beef monopoly a princely income—\$70,000,000. At twelve cents the amount consumed might fall to 6,000,000,000 pounds; but this would yield a net profit of \$120,000,000; and if the amount at thirteen cents fell to 5,000,000,000 pounds, the profit would yet amount to \$150,000,000. Fourteen cents and 4,000,000,000 pounds would be still better for the monopoly—\$160,000,000. But fifteen cents and 3,000,000,000 would be a step backward, for the profit would be only \$150,000,000. Fourteen cents, then, is the most that the monopoly could wisely charge.

Of course, if the demand did not shrink so rapidly as I have assumed, the maximum price could safely be placed at a higher figure. If the shrinkage were more rapid than I have assumed, fourteen cents would be too high.

If it is the intention of the monopolist simply to exploit the beef market for one year—to corner the present supply, make the most out of it, and then retire to live on his plunder—he may find that at fourteen cents there will be no greater shrinkage of demand than has been assumed in the example, and this will then be the best price for him to set. Most persons who are accustomed to this article of diet will continue to buy it even at the higher price. But in a year more and more of them will form other habits. A corner in beef organized in the following year might not be able to charge more than twelve cents without diminishing total net profit; and in the third year a corner might not be able to charge more than eleven cents. Accordingly, a monopolist who

does not mean to retire from business must generally avoid charging a price that would give the highest possible returns for one year. He must fix prices in such a way as to keep the bulk of his custom from year to year. And this is one reason why modern monopolists are less extortionate than the ancient and mediæval "engrossers" of the necessities of life. As a rule, the modern monopolist hopes for steadily increasing profits from a growing business; he therefore cultivates his clientèle through prices that are moderate.

If a ring of speculators of immense wealth should buy up the entire American cotton crop, they could fix the price of cotton at twice the normal price, and yet sell most of it. Cotton fabrics would advance in price, but not proportionately, for many persons would go without cotton cloth rather than pay unreasonably high prices. The profits of cotton manufacturers would fall; wages of cotton operatives would be reduced. The cotton manufacture would decline; many cotton operatives would go into other employments. Cotton production in Egypt, India, and Australia would be stimulated. It would take more than a year, however, for such adjustments to take place. In the meantime the speculators would have sold their cotton at high prices, and reaped their extortionate profits. The injury occasioned by the changes in cotton manufacture would fall upon the producers of the next American cotton crop.

If a combination of capitalists were to secure possession of the entire business of petroleum refining, it would be no less easy for them to obtain exorbitant profits for one year. But the decline in consumption that would follow, when time had been given the people to provide themselves with other sources of light and power, would seriously impair the future profits of the petroleum monopoly. Now, no profit, however exorbitant, on a single year's sales, is to be compared with comfortably high profits for an indefinite series of years. Great fortunes are to be obtained through the permanent monopolization of the means of producing a cer-

tain commodity, rather than through cornering the visible supply and exacting excessive prices, without regard to the effect of the policy on future sales. For this reason monopolies of the permanent kind are continually increasing in number and importance, while it is only rarely that a temporary monopoly is successfully carried through.

Of course there are some classes of consumers who will pay increased prices without a murmur, while other classes will not only feel greatly aggrieved, but will even refuse to buy, when prices are appreciably increased. To the rich it makes little difference whether beef is high or low. If the monopoly can array its customers in groups, according to their readiness to pay high prices, it can grade its prices accordingly. The classes that will endure only a slight increase in price are given prices so moderate that they continue to buy, while the classes that are less apt to complain over an increase are forced to pay prices that yield a higher profit. This would be much better for the monopoly than to fix an average price which would drive away the former classes, and not exploit the latter to the highest possible degree.

How then may a monopoly make such a division of its customers into classes according to their profit-yielding capacity? One way consists in different prices for different localities. If there is greater per capita wealth in California than in North Dakota, a monopoly would charge higher prices in the former than in the latter State, even allowing for all costs of transportation. Suppose that the cost of production of beef for North Dakota is ten cents and the cost of transportation practically nothing; the cost of production of beef for California we may assume is the same, and the cost of shipping two cents a pound. The beef may be sold in Dakota for eleven cents and for fifteen in California—giving a net profit of one cent in the former State and three in the latter. Of course, the difference could be as great as this only in case shipping beef in small quantities is

expensive; otherwise outsiders would buy beef in Dakota at eleven cents, ship it to California, and make a good profit. And here we have one limitation upon a monopoly's power to vary in its charges for different localities. The different cannot permanently remain at a figure which is greater than the sum an outsider would have to pay in transporting the monopoly's goods from the point where they are cheap to the point where they are dear.

In the case of many goods, however, different qualities are sold to different classes of customers. The choicest cuts of meat go to one set of consumers, and in the remaining cuts, in order of toughness, to the various sets of consumers who have less to spend. Now the consumers of the cheapest beef may stand a slight increase in price before substituting something else for beef; while the consumers of the best quality may see the price double before substituting even a cheaper grade. The far-sighted monopolist, then, instead of increasing the prices of all grades uniformly, will so distribute the increase of price as to burden each class of customers as much as they will bear without withdrawing custom.

In some cases where no real differences in quality exist, the consumer is made to believe that there are such differences. Some years ago—and perhaps to-day—there were several grades of salt in the market, selling at different prices. The manufacturer who produced them all has admitted that they were all exactly the same. The classes who could afford to pay high prices for salt bought the grade that was alleged to be the best; those who could pay less bought cheaper grades. Thus the manufacturer, who enjoyed a limited monopoly, was able to make each class of customers pay according to ability. It is easy to see how far this principle might be carried in the case of such articles as soap, chocolate, canned goods.* It is a wise man who

* Some excellent examples of this kind of juggling with the consumer's desire for good qualities are to be found in Professor Ely's *Monopolies and Trusts*.

knows what ingredients go into these commodities; and if the manufacturer, who must know, says that one is purer or more choice than another, what can you or I do but accept his statement and pay the higher price for the so-called better quality?

It must already be sufficiently evident that the monopolist who wishes to get the very highest possible profit has a very complicated problem, even in the case of goods ready for consumption. In the case of goods that may also serve as means for further production, the problem is still more complicated. Let us take as an example anthracite coal. Part of the supply is used to heat dwellings and other buildings; part of it is used to provide power for manufacturing. Suppose now that in New York City, where smokeless fuel is required by public authority, and where it would be somewhat difficult to find a substitute for anthracite, the price is forced up to \$10 a ton. The very poor might prefer to freeze rather than pay the price; but the great majority of the inhabitants of New York would continue to buy anthracite much as before.

Now in all the great cities of the North Atlantic seaboard anthracite is extensively used in manufacturing operations. If the price goes up to \$10—almost double the ordinary price—many manufacturers will substitute coke or bituminous coal. If these are not to be had, factory after factory closes down, since manufacturers in this section have to sell their goods in competition with manufacturers in the Middle West, where bituminous coal is cheap. The great demand for anthracite for manufacturing can remain only if the price remains moderate. Exorbitant prices for this fuel, if made universal, would result in limiting the consumption of it from year to year.

Why might not very high prices be charged in New York City, and more reasonable ones in the factory towns? Of course, if the price were much higher in New York than in Newark or Paterson, enterprising teamsters would cart

coal from those cities into New York. The difference in price between different places cannot greatly exceed cost of transportation.

The profit of our imaginary anthracite monopoly then is bound up with the welfare of the manufacturing community. In like manner, a railway may be the only means of carrying goods to and from a given agricultural region; but if it charges very high rates on what it carries, the region is soon impoverished; lands go out of cultivation; towns decay; and their inhabitants move to districts where better transportation conditions prevail. And with the ruin of local business would come the ruin of the railway. So narrowly are the charges of railways limited—even though they possess a monopoly—that in perhaps a majority of cases they cannot charge more than will cover expenses and pay a reasonable return on the capital sunk in the road.

To sum up then, even an absolute monopoly is limited in its power to extort money from the public. The more elastic the demand for a commodity—i. e., the more readily demand increases with a fall in price, or diminishes with a rise in price—the more moderate will be the price which yields the highest return to the monopolist. And the more permanent the plans of the monopolist, the less does he seek the maximum profit for a single year.

Now, the demand for most commodities is growing more and more elastic. We have more wants to satisfy than our ancestors had; and if a monopoly gets control of the means of satisfying one want, and seeks to extort money from us by this means, we may leave this want unsatisfied and turn our attention to some other one which demands satisfaction only less insistently, and which we can gratify without paying tribute to a monopoly. At the same time, the monopolists are growing more and more far-sighted; they refuse to sacrifice steady profits through years to the desire for a huge profit for a brief time. Thus economic forces

are at work limiting more and more the possibilities of vast monopoly profits.

Yet the prices of goods controlled by monopolies would be considerably higher than competitive prices were the monopolies really absolute. There are, however, few even of the most powerful trusts that have gained anything like complete control in their fields. There remain competitors, often very active ones, ready to expand their output whenever prices become very high. What an intelligent monopolist will aim to do, therefore, is to fix prices high enough to make a good profit, but not so high as to give a great inducement to new producers to enter the field, nor so high as seriously to limit his market in the long run.

While monopoly prices tend to remain above cost of production, yet there is always some relation between the cost of production and the price. There may not be an excessive difference between the two. To arrive at a more thoroughgoing explanation of price, therefore, it will be necessary to analyze further the costs of production and to study the forces which fix the rates paid for the goods and services that enter into the work of production.

CHAPTER V

THE COST OF PRODUCTION

The preceding chapters have shown that the costs of production play an exceedingly important part in determining the values of goods. Commodities produced under competitive conditions tend to sell at cost; commodities the production of which is controlled by monopolies sell above cost, as a rule; but at prices which usually stand in a close relation to the costs of production. Accordingly, to carry our study of values a step farther, we must enter upon a study of the laws governing the costs of production.

At the outset it is worth while to bear in mind that what is "cost of production" to one man or class of men is "income" to another man or class of men. To the employing producer who conducts an independent enterprise (and whom we shall therefore call the enterpriser) wages are simply a part of the cost of production. To the workman wages are earnings, income. The enterpriser counts in his outlay or costs the interest on the capital invested in his plant. To the capitalist this same item is income. The price of the coal which is consumed in providing power represents nothing but an expense to the enterpriser; but to the coal mine operator the price of the coal represents gross income. A closer examination of this gross income shows that it contains a net income to the coal mine operator; wages of labor employed in mining; interest on capital invested in the business, and certain other items—a sum for the replacement of machinery and other apparatus worn out, taxes, etc.—which further analysis will show to be in part or wholly incomes to some one.

But we are not concerned in this chapter with incomes as such; our immediate concern is with cost of production,

Our point of view will be that of the enterpriser, whom we shall assume to be acting frankly with a view to his own interest, paying no higher wages or interest than he is compelled to pay.

The materials that enter into production are commodities, and their market value and normal value are determined much as the market and normal values of the commodities fit for immediate consumption. We may examine briefly the process by which cotton yarn, the material of the cotton weaving industry, is valued. A multitude of weavers desire to buy it; some of them would pay a price of 10x per hundred pounds rather than go without it; others would pay only 5x per hundred pounds. A multitude of sellers stand ready to furnish cotton yarn; some may be willing to sell at 5x rather than not sell at all; others may be willing to sell only if the price is 10x. What price will actually be set? Just as in the case of commodities for direct use, the market price will be fixed at a point where demand and supply are equal—that is, where the amount offered at a given price is exactly equal to the amount that will be taken at that price.

But the price fixed at any moment by demand and supply may exceed the cost of producing the yarn, even in the mills of those enterprisers who produce at the greatest cost. In such case the output of cotton yarn will increase; the price will come down, until it just covers cost of production to those who are producing at the greatest disadvantage. If the price were to fall still lower, these producers would have to quit the business; and this would reduce supply and thus of itself tend to force up the price of cotton yarn. But the same price may be high enough to give excellent profits to the more efficient producers; these continue to extend their business, and the increase in supply from this source may be more than an offset for the decrease resulting from the closing of the less efficient mills. Thus the price gravitates steadily downward, resting momentarily at cost of production to the least efficient producers; then sinking to the cost

level of slightly more efficient producers; finally resting at the level of cost of the most efficient producers of all. Thus it appears that we need no new law of valuation to explain the action of sellers of cotton yarn. They act just as they would if they were selling a commodity ready for consumption.

Do the buyers of cotton yarn act just as do the buyers of commodities ready for consumption? Not quite. One consumer may get ten times as much satisfaction out of a barrel of apples as another. He may for that reason be willing to pay ten times as high a price. But one buyer of cotton yarn probably turns out just the same grade of cloth as another, and sells it for the same price. As one cloth manufacturer thus sells at the same price as another, and buys material at the same price, why should one be able to bid a higher price for the material than another? It must be because other elements in the cost of production of cloth—fuel, labor, the use of capital—cost him less, or because he has greater skill in utilizing material or in organizing his labor force. We see, then, that there can hardly be such wide differences in the prices which different manufacturers of cloth can afford to pay for cotton yarn as in the prices different consumers can afford to pay for apples.

Now let us see what would happen if, through a general increase in the demand for cotton fabrics, the price of cotton cloth should everywhere rise. All the manufacturers of cloth would at first enjoy a profit. To increase that profit each manufacturer would try to extend his business somewhat, and this would tend to bring down the price of cloth. But in order to extend the cotton cloth manufacture, more yarn must be had; and our hypothesis did not include a simultaneous expansion of the spinning industry. The cloth manufacturers would have to bid against each other for the existing supply of yarn; the price of the yarn would rise, until cloth again sold at cost. We see, then, that it is not merely because of competition in the sale of finished products

that such products sell at cost; it is also because of competition in the purchase of the elements of production. If the price of cloth is for a time much above cost the expansion of the cloth manufacture tends to lower the price of cloth and raise the price of yarn and other elements in cost, until the price of cloth and its cost are again nearly equal.

Looking now at the manufacture of yarn, we see that such an increase in the price as we have assumed will give high profits throughout the industry, and consequently will give rise to an attempt on the part of each manufacturer of yarn to extend his output. But this he can do only by increasing his consumption of raw cotton. As the business expands, the price of yarn tends downward, and that of raw cotton upward, until no exceptional profits are left to the yarn manufacturers as a class.

Such an increase in the price of raw cotton means high returns to the growers of cotton. These, we may assume, had been selling their cotton at a price which gave a fair equivalent for the cost of labor, of the use of agricultural implements, of fertilizers and of the use of the land. The price now exceeds these costs. If this state of affairs continues, more men will desire to grow cotton, either buying cotton lands or renting them. As such lands, of the best quality, are not unlimited, the rental and the price of land will go up. Here again the cost of production rises with the price of the product. Part of the increase in cost of production may assume the form of increase in the price of fertilizers; and this part we could trace still farther if we desired. The part which represents increase in rental of land can be traced no farther, for there is no cost of production of land.

In the example given above it has been assumed that labor cost and the cost of the use of capital remain unchanged, in spite of the expansion of the cotton industry. This assumption may or may not be justifiable. An increase in the number of laborers and an increase in the amount of capital invested in buildings and machines, or used in the

purchase of materials and other supplies, would necessarily attend any expansion of the industry. To secure the additional labor and capital, the manufacturers of cotton cloth may be compelled to offer slightly higher wages and interest than they formerly paid. But the amount of capital to be had at the prevailing rate is enormous; and the slight increase in demand from the cotton industry would hardly be able to exert a perceptible influence in raising the rate. The same thing would be true of labor. To attract more laborers to the cotton industry, it would be necessary to offer only a slight increase in wages, as it is fair to assume that before the changes in the cotton industry occurred, wages in that industry were roughly equal to those in other textile industries, or even to those in manufacturing industries in general, allowance made for differences in the skill required and in the relative agreeableness of occupation. In such case, labor cost may be regarded as fixed, or more correctly, as rising and falling with the general trend of social prosperity, not with the expansion or decline of a particular industry.

It sometimes happens, however, that a more intimate relation exists between labor cost and the fortunes of a single industry. This is the case where for some reason a definite labor force is dependent for employment upon one industry. Here we see a rise in the price of the finished product followed by a rise in wages. Other elements in cost may also rise, and take a share of the increased price, or they may remain relatively stationary.

Let us imagine that a new branch of production arises—say, the manufacture of wrapping paper from corn-stalks. A single factory is erected, and let us assume that it will be operated in the winter months only. Of course the factory will have to be located in the country, the source of raw material. And in the country there is a great deal of labor that is hardly employed at all in the winter months. At what rate will our manufacturer be able to hire this labor?

It is clear that the cost of living will have nothing to do with the wages fixed. Country laborers are paid enough in the open months of the year to carry them through the winter. What they earn in the paper factory is a net addition to their annual income. They can work for nothing, and be no poorer than they were before the factory was erected. The work in the factory may be pleasant rather than otherwise. Nevertheless, it is safe to assume that some rate of wages must be paid. Perhaps a wage of fifty cents a day will provide the requisite amount of labor. If so, that is all the manufacturer will pay.

Now, if the manufacturer gets his labor at such a low rate, he may make extraordinarily high profits. In this case other enterprisers are likely to go into the business. If the industry assumes extensive proportions, it soon drains off the supply of labor that can be had for fifty cents a day. Further expansion becomes possible only through an increase in wages which will tempt into the industry workmen who regard their ease as worth more than fifty cents a day, or who are earning at least that wage in caring for live-stock, etc. But profits may still be high, and new enterprisers may be continually entering the business. To secure laborers at all, they are compelled to offer wages slightly higher than those paid by the enterprisers whose business is already established. The latter, in order to retain their laborers, are compelled to meet the bids of their new competitors. Thus wages for this kind of work go up, until all the enterprisers are fully supplied with workmen.

Any further expansion will be followed by a similar increase in competition among employers of labor, and a rise in the rate of wages will be necessary in order to induce less industrious workers, or workers having some alternative employment, to enter the factories. But each expansion of the industry means an increased product thrown on the market, and, other things equal, a lower price for it. What with the rising of wages and the falling price of paper, it seems clear

enough that the profits of the enterpriser must be declining. Possibly the expansion will continue until wages have risen to \$2. All will depend upon the amount of paper that will be taken at a given price, and the amount of labor available.

From this example it appears that wages cost cannot always be regarded as a fixed element in the enterpriser's calculations. The same competition among enterprisers that forces prices down forces wages up. Of course if the enterprisers were to combine, agreeing upon a harmonious line of action, they might hold wages down, through limiting the demand for labor, just as they may keep prices of finished products up by limiting the supply placed on the market. And here it may not be amiss to remark upon a frequent defense of combinations and monopoly. "Competition in the sale of goods so reduces prices that it is impossible to pay fair wages to the workman." As a fact, increasing competition—the appearance of new enterprisers—is likely to force wages up while forcing prices down. A monopoly, limiting output and limiting demand for labor, may be able to pay high wages to its employees. But will it do so?

We may now take another example, which will illustrate some further points in the law of wages cost. Let us assume that there is a city which has been devoted almost exclusively to the manufacture of iron and steel goods. A cotton manufacturer, visiting the city—Ironton, let us call it—shrewdly concludes that the iron workers must have a number of sisters and daughters and other female relatives, who are practically wasting their time, and who would be glad to earn a small income by cotton spinning and weaving. Accordingly he erects a mill at Ironton. Very likely he will get all the labor he cares for at twenty-five cents a day, while his competitors, in the established centers of the trade, are paying a dollar a day for the same grade of labor.

It is true that other elements in cost may be greater in Ironton than in other centers. It may cost more to bring the raw material to that place, and to ship away the finished

product. Fuel may be more expensive; and the wages of the mechanics who erect the mills and set the machinery in working order may be higher. The salaries that must be paid to foremen and overseers may also be higher than in the older centers. But in spite of all this, the cost of producing a given grade of cottons at Ironton, with wages at twenty-five cents a day, may be twenty per cent. lower than the cost of producing the same grade in the older centers, while the selling price may be just the same. Of course this will give the enterpriser at Ironton large profits. Before long other enterprisers will begin to wonder why a cotton mill has been set up at Ironton; and finding, upon investigation, what advantages that city offers in the way of low costs, they too begin to erect mills there.

The effect of the appearance of these new manufacturers at Ironton is to increase the demand for cheap labor. Possibly there are so many women and girls who are ready to work for "pin money" that the new mills can be plentifully supplied with labor at the same price as has been paid by the enterpriser first in the field. But it cannot be a great while before the supply of twenty-five-cent labor falls short of the demand; enterprisers erecting new mills will have to offer a little higher wages to entice workers away from the older mills; and these will have to raise wages to the rate offered by the newcomers. The competition will continue until wages are so high as to induce a new set of workers to enter the mills. Costs at Ironton may still be abnormally low after wages have risen, say, to fifty cents a day. In that case the cotton industry at Ironton will go on expanding, until at last aggregate costs are as great at Ironton as in the older centers of the trade. This does not mean that wages will be just the same. They may be seventy-five cents in Ironton and \$1 in the older centers.

If coal had been cheaper, mechanics' services cheaper and more efficient, transportation facilities better, at Ironton than in the older centers of the cotton industry, the ex-

pansion of the industry at Iron-ton would not have stopped when wages had reached the level prevailing in older centers. With wages at that level total costs would still have been less in Iron-ton than in the older centers; and so the industry would have continued to expand, until the rise in wages completely offset the other advantages in favor of production at Iron-ton.

From this example we see that the rate of wages which competition of manufacturers tends to fix cannot be uniform for the different localities where a given commodity is produced. Where other costs are relatively low, competition will force wages to a relatively high figure, and *vice versa*.

Now let us suppose that, while the cotton industry in Iron-ton is developing, woolen manufacturers decide to erect mills in that place. They know that the cost of labor in their factories must bear a close relation to cost of labor in the cotton industry. If they could make the work in the woolen mills easier than work in the cotton mills, they might count on getting labor at a trifle less. On the other hand, if work in the woolen mills were less agreeable than work in the cotton mills, wages would have to be slightly higher in the former than in the latter.

The appearance of the woolen mills would have exactly the same effect upon the wages of the cotton operatives as the appearance of new cotton mills would have. The woolen manufacturers would offer wages sufficiently high to attract workers away from the cotton mills, and the cotton manufacturers would be forced to raise wages slightly in order to keep their working force intact. Further, this development in the demand for labor in the textile industries might in the end react upon wages in other industries—even in the iron industry. As soon as wages in the cotton and woolen mills rose above the wages paid certain classes of laborers in the iron works, boys and young men would leave the iron works to learn to operate looms. The resulting

scarcity of labor in the iron works would naturally raise wages there.

If we wish to formulate, provisionally, a law of wages cost, we may say that, at a given time, wages in any industry must be sufficient to prevent workmen from leaving that industry to seek employment in other industries in the vicinity; and that if competition exists among different producing centers, all supplying the same markets, wages in an industry in one center will rise or fall until, together with other costs of production, they equal wages plus other costs of production in the other centers where the industry is carried on. To give a numerical example, if in city A one hundred yards of cotton cloth cost \$10, of which \$8 consists of cost of materials, fuel, interest on capital, etc., and \$2, of wages; and if in city B, which obtains the same price for cloth at the mill, all other costs amount to only \$7, wages in B will rise, under competition, until labor cost amounts to \$3.

But may it not happen that an enterpriser is enabled to keep costs of production low by forcing workers in particularly necessitous circumstances to accept a lower rate than is prevailing in the district? And can he not undersell enterprisers who pay the prevailing rate, and so force the latter to cut wages? Assuredly there are employers who take advantage of the ignorance or poverty of their employees, and pay lower wages than their competitors pay. It is evident, however, that no large business can long be conducted on such a plan. Other employers will in the end entice away workers thus underpaid. And it is evident that the unfair employer will not sell his goods at a lower rate than his competitors, and so force prices down. It is not through producing at low costs, but through increasing one's output, that one forces prices down. The unfair employer will find it difficult enough to keep his present labor force; he will hardly be able constantly to increase it by offering starvation wages.

May not the cost of labor be increased through the de-

mands of labor organizations? This question can only be touched upon here. If there is no organization of labor, and if active competition among employers exists, wages for labor of a given grade of skill will in the end be as high in one industry as in other industries in the same vicinity, allowance being made for agreeableness or disagreeableness of employment. General wages in one industrial center will in the end be what they are in other industrial centers, allowance being made for differences in other costs. Now, a trade union can help wages to rise to these natural levels: if it forces them higher, it is likely to destroy the industry of the places under its control.

We may now consider how far it is true that the price of the use of capital, or interest, remains constant in spite of the expansion of an industry. We may imagine that in a certain district the rate of interest is low. An enterpriser engaged in an industry requiring large investment of capital may find that he can produce more profitably there than in a locality where interest rates are high. Of course this can be the case only if other elements in cost of production—wages, fuel, materials—are not so much higher than in other localities as to balance the advantage of low interest rates. Granting, however, that the low interest rates are not thus offset, the enterpriser will for a time enjoy low aggregate costs, and therefore high profits. But soon competitors appear, who offer a slightly higher rate of interest for the capital offered by local capitalists. Enterprisers in other industries likewise seek to take advantage of the low interest rates, until the rise in interest eats up the margin between selling price and cost of production.

It must be admitted that this example is more nearly an imaginary one than were the examples employed to illustrate the laws governing wages cost. Why should interest rates be particularly low in one locality? Is there any reason why a person residing in Boston should loan his capital to Boston business men? It is no more difficult, practically, to lend it

to enterprisers in Pittsburg. For this reason interest rates on capital are pretty well equalized throughout the country. It is easy to find industries migrating to sections where labor is cheap, or where the cost of fuel or of raw material is low. But it is not easy to find an industry migrating to a certain point because interest rates are lower than at other points in the same country. It is less difficult for the capital to migrate than for the industry to do so.

Not all capital, however, is embodied in forms which permit it to migrate from one industry to another. A part of the capital of the manufacturer consists in the land upon which his mill is erected. A much larger proportion of the capital of a farmer is invested in land. The capital of a railway company consists partly in rolling stock, which gradually wears out and must be replaced; it consists partly in right of way, in grades and tunnels, which have perpetual life, as it were. Capital which consists in goods that must be periodically replaced may at the moment of replacement be diverted to other industries. But capital which is embodied in permanent goods cannot thus change from one industry to another.

What will determine the amount that an enterpriser will have to pay for the use of land, or of other forms of durable capital? In the first place, it is clear enough that he will have to pay what any other enterpriser will offer. If, for example, one wishes to rent a field upon which to grow sugar beets, he will have to pay as high a rental as other beet growers in the vicinity pay for equally good land. And this rental will have to be as great as wheat growers in the vicinity pay for the same quality of land used for wheat.

Beet growers may find, after paying all other costs, that a considerable profit remains in their hands from the sale of their beets. In such case the industry will expand, new enterprisers converting wheat lands to beet culture. The increasing output of beets might conceivably reduce their price; but more probably, since an enormous increase

in the sugar output of a given locality would yet be a very small addition to the world's sugar supply, the price of beets will remain fairly constant. If no difficulty is experienced in obtaining labor and auxiliary capital the expansion of the industry will continue until all the lands especially well fitted for beet growing are given over to that branch of agriculture. If the beet growers still have a surplus profit, they will compete among themselves for land, each desiring to increase his acreage. Higher rents will be offered, until the extra profits of the enterpriser are absorbed by this increasing element in cost.

Of course if the labor supply is limited, relatively to the demand for it in beet culture, the expansion of that form of agriculture will gradually force wages up. Possibly the rise in wages will swallow up the profits of the enterpriser before all the ground that is well adapted to beet culture has been taken. In that case the expansion of the industry will cease without occasioning a perceptible rise in rents.

We may now give our attention to another element in the cost of production of many commodities—the price paid for crude materials as they exist in nature before any change has been wrought in them by industry. To illustrate the laws governing the value of these crude materials, we need to go back to an early stage, when they existed in quantities far in excess of any need for them. The cost of bricks under such conditions would contain no element representing clay in the bank or trees on the hillside. It would consist solely in wages of labor employed in cutting and hauling the wood, in digging and mixing the clay and shaping the bricks, and in interest on capital invested in kilns and drying sheds, etc. Bricks might at a given time sell at a price in excess of these costs; but this would cause new brick works to be erected and the price of bricks would fall, or the rate of wages would rise, until bricks were selling at a price merely covering cost.

As population increased the demand for wood for brick-making would increase, as would also the demand for wood

for other purposes. In time the proprietor of woodlands would see an end of the supply within easy distances, and would demand a price for wood in the tree. Here, then, would be a new element in the cost of bricks. Further growth of population might make the supplies of suitable clay seem insufficient to meet all demands, present and prospective. The owner of clay deposits could therefore demand a royalty for every cubic yard of this material. If the demand for bricks continued to increase, the price of wood and of clay would steadily rise. As soon as labor became so abundant that the brick-making industry could readily expand without materially forcing up the rate of wages, a constantly increasing proportion of the selling price of the bricks would be absorbed by the cost of the raw material.

In an earlier chapter it was shown that price is continually tending toward cost of production. We now see that in a sense cost of production itself is influenced by the price of finished products, a high price increasing the cost of certain elements in production, if not of all. It appears then as if we had been reasoning in a circle. Cost of production determines price; price determines cost of production.

If we take a very broad view, we see that the value of anything which serves as a means of further production depends in large measure upon the price of all the products into which it enters. The value of labor thus depends largely upon the price of the products which it helps to create. All the other elements that coöperate with labor in production derive their values in a similar way from the finished products. The price of all the elements in production, taken together, tends to equal the prices of all products. Thus we may properly say that cost is constantly adjusting itself to price.

If, however, we take a narrower view, confining our attention to a single industry, the costs of production may appear to be unvarying. If the price of cotton fabrics is high, competition in the end forces it down, instead of forcing wages and interest up. This is because the value of

labor and of the use of capital is derived not from the price of cotton fabrics alone, but from the prices of all commodities into which these factors enter. And the cotton industry is not great enough to cause a perceptible rise in the wages of all labor and in the interest on all capital. So far as this industry alone is concerned, or any other single industry, price adjusts itself to cost. If, however, a certain element in cost is confined to a single industry, we see before our eyes the cost of a commodity adjusting itself to the price of a commodity, just as in the whole field of industry all costs are adjusting themselves to all prices. The classical economists were puzzled by these instances of costs that rise or fall with the price of particular commodities. As they did not realize that all costs, viewed broadly, thus rise or fall, they concluded that such shifting costs were not costs at all.

It has been indicated that if, in one out of several centers producing the same commodity, other elements in cost are relatively low, the cost of labor will be relatively high, and *vice versa*. In a district where the interest on capital and the cost of fuel are abnormally high, a manufacturing industry may often be carried on successfully in competition with other districts where capital is to be had at a low rate of interest and where fuel is cheap. But wages in the first district will probably have to be low to offset the high cost of the other elements. If any district enjoys the advantages of very cheap coal and low interest rates, wages in a branch of manufacture carried on there will rise to offset these advantages.

We see then that the price of one element in production must bear some relation to that of the other elements. The rate of wages in special industries in particular districts is affected in some measure by the rate of interest in the same district. Whether the general rate of wages is similarly affected by the general rate of interest, will be a question for consideration in later chapters, when we shall seek to ascertain the laws governing these forms of income.

CHAPTER VI

THE LAW OF DIMINISHING RETURNS

In the last chapter we saw that one of the forces limiting the expansion of an industry is the tendency of costs to rise to the selling price of the product of the industry. The American cotton spinning industry may be very profitable this year—that is, the margin between the selling price of cotton yarn and the cost of producing it may be wide. But before long an expansion of the industry will take place; increasing demands upon the existing supply of skilled labor, of raw cotton, and of other factors in the production of cotton yarn will force the expenses of the enterprisers engaged in the industry to a higher level.

We saw further that not all elements in cost show the same tendency to increase. In cotton spinning, part of the labor force is skilled, part of it unskilled. If the industry were to expand, say, by fifty per cent., a great strain would be put upon the supply of labor specially trained for cotton spinning. No particular strain would be felt by the supply of unskilled labor, for outside of the spinning industry enormous quantities of unskilled labor are to be had. The skilled labor might therefore for a time enjoy a large increase in wages, while the wages of unskilled labor would scarcely be affected at all.

Similarly, such an expansion of the industry would represent a great strain upon the supply of raw cotton, which for a year could not be increased at all. Quite possibly the price of raw cotton would be doubled. The same expansion of the cotton spinning industry would result in an increased demand for coal for power. But the use of coal is so universal, and the volume of its consumption so vast, that the increased demand from the cotton industry

would be a negligible factor in influencing its price. Coal would probably not rise perceptibly.

For a somewhat different reason, the output of a single enterpriser can often be increased only at increasing cost. It is true that one enterpriser out of a multitude cannot force up the wages of labor against himself, as a whole industry can do. Nor can he exert any perceptible influence upon the price of raw material and other supplies. But there are usually certain factors entering into his production that, so far as he is concerned, are either limited absolutely, or can be increased only at a disproportionately heavy outlay. In any agricultural section you may find an enterprising farmer forced to limit his operations to a single hundred acres. He could hire as many men as he pleased at \$25 a month, the price he pays his one "hired hand." He could buy additional teams and additional machinery at no advance over the price of those he already has. Why should he not buy or rent additional land, and carry on a large scale business? Because all the adjoining lands are occupied by men who prefer to till them with their own labor and who would consequently demand a very high rental, if they consented to give up their land at all. Our farmer might be compelled to go a distance of three or four miles to get additional land at reasonable rates. Of course land could not be advantageously managed from such a distance. Hence he is forced to content himself with his own one hundred acres.

In almost any town you may find a bright and capable young grocer, conducting the pettiest corner grocery business. The possibilities of trade may be numerous; a store ten times as large might easily be supported by the potential custom. Why then do we find a little store? The young merchant might easily rent larger premises, without more than a proportionate increase in rent. He might hire as many clerks and delivery boys as he wished, without paying a rate of wages in excess of the rate he pays to the

one or two already in his employ. What he especially lacks is capital. Perhaps he has \$5,000 of his own. The cost which the use of this capital represents is merely the interest he could get in a savings bank—say, four per cent. With \$5,000 capital of his own, he may be able to borrow another \$5,000 at six per cent. For an additional \$5,000 he would probably have to pay ten per cent., as the security he has to offer is not so good. It is unlikely that he can borrow more capital, no matter how high a rate of interest he may be willing to pay. The maximum business he can conduct, then, is one for which a capital of \$15,000 will suffice.

A small stream, flowing between high, rocky banks, may offer an excellent opportunity for the establishment of a factory, to be operated by water-power. Let us suppose that a manufacturer, acquainted with the advantages of the location, decides to erect a mill. He may be able to command practically unlimited capital. Whether his mill will require one hundred hands or one thousand will make no difference in the rate of wages he will have to pay. Raw material can be obtained at least as cheaply in large lots as in small. Plainly, what will determine the size of the factory will be the power to be obtained from the stream. A ten-foot dam will give a certain power; a twenty-foot dam a much greater one, and every additional foot in height of dam means additional power. But there is an absolute limit to the height to which the dam may reach, without forcing the stream above its banks and ruining a large amount of property on the lower levels adjacent to it. There may also be limits of expense; after the dam has reached a height of twenty feet, further addition to its height may imply such a great increase in its length and in the character of the materials required to stand the increased strain that the additional power is not worth its cost.

It will not be necessary to multiply instances further. If the student will examine the various businesses with which he is acquainted he will observe that in a large pro-

portion of them it is difficult, if not impossible, to duplicate all the elements in production without incurring disproportionate expense. Businesses do increase in spite of this; but the increase does not take place in a symmetrical fashion. The labor and movable capital may be increased while the land area is left unchanged; the number of laborers may be increased while the capital remains fixed in amount. Some of the factors in production respond readily to the strain of an expanding business; others show great resistance to such strain, but yield slightly; others yield not at all.

Let us return now to the case of the farmer, confined to his one hundred acres of tillable land. By his own labor and with a single team and the appropriate machinery he may till the whole tract. Fifty acres, we may imagine, are put into wheat, fifty acres into corn. In the time for sowing wheat, a few good days may be followed by a week of rainy weather. Half of the wheat field may be sowed in time to get the benefit of the wet weather; the other half of the field may have to be left until the ground is dry, and so this part of the crop will lose the advantage of a fair start. Similarly part of the corn planting may be belated, with resultant danger to the crop from early frosts. There may not be enough dry days in the late spring to enable the farmer to keep his cornfield free from weeds. In harvest time, the chances of loss from delays in cutting and stacking the wheat are still greater. Of course these adverse chances may not be realized. The weather may be dry just when it should be; the rains may come just when they are wanted. But experience proves that the weather is not thus happily regulated. One year with another, our farmer will be fortunate if he gets twelve bushels of wheat and forty bushels of corn per acre.

Instead of tilling the whole tract with his own labor, the farmer may hire a man to help him. He buys an additional team, plow, harrow, cultivator, etc., practically duplicating his stock of machinery as well as his supply of labor.

The land can now be much more carefully tilled; it will almost surely yield a greater aggregate return. Will the return be doubled? It would be unreasonable to expect this. More probably, the wheat yield will increase to fifteen bushels; the corn yield, to fifty bushels. If wheat is worth seventy-five cents a bushel and corn twenty-five, what the farmer will gain from the additional labor and capital will be \$112.50 worth of wheat and \$125 worth of corn—\$237.50 in all. Does it pay to employ the additional laborer? If he is employed for only six months of the year, at \$25 per month, we must set \$150 against the \$237.50 for wages. If the additional capital amounts to \$500, borrowed at the rate of five per cent., and if the wear and tear of capital goods—horses and machines—be placed at \$50, we must add another \$75 to the cost. Thus, in order to obtain \$237.50 worth of wheat and corn, our farmer must incur \$225 of cost. His net gain, then, is \$12.50.

Now let us imagine that he employs a second hired laborer, and invests an additional \$500 in a team and machinery. How much will be added to the crop? It is unlikely that the addition will be as great as that resulting from the employment of the first hired workman. We will assume that the wheat crop per acre is increased to seventeen bushels, the corn crop to fifty-five. On the same price basis as we assumed before, the value of the addition to the crop will be \$137.50, while the additional cost of tillage will be \$225. We see that it does not pay to put three men upon the one hundred acre farm.

A practical farmer might experiment in this way with a second hired workman; having discovered how unsatisfactory the result, he would in the future content himself with one hand. To satisfy our own curiosity, however, let us see what would happen if a third hand were employed. Perhaps the crop of wheat would increase to eighteen bushels, and the crop of corn to fifty-eight, an increase of value of \$75. A fourth hand might increase the crop of wheat to

eighteen and one-half bushels; that of corn to fifty-nine. There is no reason why every additional workman should not make some small addition to the crop, until the wheat crop had become fifty bushels and the corn crop one hundred and fifty. But it is idle to spend time in carrying out in detail a study of the results of a workman's labor, when these results are so much less than cost that no enterpriser would undertake to secure them.

An important principle, involved in this example, may now be stated. From a given area of ground, an amount of produce can be obtained increasing with every increase in the labor and auxiliary capital employed in tillage, but increasing less than proportionally with the increase in labor and auxiliary capital. This principle is called the *law of diminishing returns in agriculture*.

If the rate of wages had been \$10 a month, all the other factors in our problem remaining unchanged, the gain to the farmer from the first workman hired would have been \$102.50, instead of \$12.50; the second workman, instead of representing a loss, would have given a net gain of \$2.50. To employ a third hand, adding \$75 to the total yield, but entailing an expense of \$60 for wages and \$75 for interest and replacement of capital, would not have paid.

It is to be observed that the rate at which the productiveness of additional increments of labor and auxiliary capital declines varies for different lands and for different crops. The example which has been employed assumed a light, well-drained soil, such as is found in large tracts of the upper Mississippi Valley. If the hundred acre farm had consisted instead of heavy, boggy land, one man could hardly have kept it all under cultivation. If he had tried to do so, very likely his crop would have averaged less than ten bushels of wheat and thirty of corn. A hired workman, with auxiliary capital as in the earlier example, might have raised the product to thirteen bushels of wheat and forty of

corn; a second hired workman might have increased the crop to sixteen and one-half bushels of wheat and forty-nine bushels of corn; a third, to eighteen bushels of wheat and fifty-seven of corn; a fourth, to nineteen bushels of wheat and sixty-four of corn. With wages at \$25, it would still not have paid to put the second workman upon the land. But with wages at \$10 a fourth workman could have been profitably employed, as the additional product arising from his employment would have been worth \$143.75, while his wages, together with interest and replacement of wear and tear of capital goods, would have amounted to only \$135. Possibly, under the circumstances, a fifth hired man might be employed upon the land.

If the farmer is engaged in raising potatoes instead of corn and wheat, one hundred acres will be much more than he can handle alone. If he cultivates as large a part of the area as he can, say twenty-five acres, he may produce one thousand bushels. A hired workman could be set at work on another twenty-five acres, and add one thousand bushels to the product. Diminishing returns will not appear at all, for the field as a whole, until four are at work there. A fifth would probably add less than one thousand bushels, but might add nine hundred and fifty. Even a tenth might add five hundred bushels. Let the price be fifty cents a bushel: the tenth workman adds \$250 to the product; and if it costs \$225 to pay his wages and the other expenses attending his employment, it is well worth while to employ a tenth workman. With wages at \$10, very likely a twenty-fifth workman would add more to the total product than the expense which he would occasion.

If wages remain stationary through a period of time, but the prices of agricultural produce rise, the number of laborers that may profitably be employed upon a given area of land will of course increase. If in our first example wheat had sold at \$1.50 a bushel and corn at fifty cents, the increase in product arising from the employment of the first

hand would have had a value of \$475; from the second, \$275; from the third, \$150. Under the circumstances, the farmer would find it profitable to employ two laborers instead of one. The increase in number of laborers that might profitably be employed would be still more striking in the case of the farm with heavy soil, given a doubling of the price of the produce. If we assume high prices as well as low wages, the land of both grades will be cultivated with still greater expenditure of labor. And this is in some measure an explanation of the fact that where labor is cheap and the prices of agricultural products high, as in some of the countries of Europe, land is cultivated far more intensively than in places where labor is dear and the prices of produce low, as in the western part of the United States.

The principle of diminishing returns, as it operates in agriculture, was first formulated by economists more than a hundred years ago, although practical men have of course taken account of it in their business conduct ever since agriculture became man's chief source of food. The applicability of the principle to land devoted to trading and manufacturing purposes was for a long time ignored by economists. This may be explained by the fact that formerly urban land was so cheap that the small amount required for the erection of a shop or a factory represented an almost negligible element in the total costs of carrying on a business of this nature. The enterpriser rarely found himself forced to adjust his business with a view to obtaining the greatest possible use out of a definite amount of land. If his capital sufficed for so large a business, he purchased or leased a city block on which to erect his buildings; if his capital was small, he limited his use of land to a few lots. To-day conditions have changed in consequence of the extraordinary growth of the cities. The merchant who desires to carry on a business in the heart of the business district of a great city often finds himself restricted

to a given number of front feet. The adjacent lots are taken up by establishments which show no disposition to remove. It is then a question how to conduct a maximum paying business upon a fixed ground space.

One way of overcoming the limitation of ground space consists in erecting a very lofty building. Instead of contenting himself with a building of six stories, the enterpriser may push the height to fifteen or more. Perhaps it costs \$600,000 to erect a six-story building. An additional \$100,000 may possibly give another story; but more probably the seventh story will in effect cost more than this. To raise the building materials to this height is more expensive than to raise materials to a lower story. Moreover, a seven-story building is not merely a six-story one with a floor super-added. In planning the taller building, it is necessary to allow for greater strength of wall in the lower stories, in view of the additional weight to be borne by them. Greater care must be exercised to reduce risk from fire. In addition to the increased cost of construction, there will be greater costs in connection with the permanent use of the seventh floor than in connection with the use of lower floors. More labor will be spent in carrying up the goods to be exposed for sale, and in carrying down the articles sold. More numerous and more powerful elevators will be required for the higher building. We may therefore place the initial cost of the additional floor at \$120,000. The net profit from the use of this floor, allowance being made for the increased costs, may, however, represent a fair return on \$200,000. The erection of the higher building is therefore profitable.

An eighth floor would, in effect, cost still more than the seventh—\$140,000, let us say. The cost of operation would also be increased. As there is ordinarily no reason why the business accommodated by this floor should be in any way greater than that accommodated by the seventh, the profit may be assumed to be less—say, a fair return on

\$180,000. A ninth floor may yield a fair return on \$160,000 and cost about the same sum. Here then is the limit to upward extension of the business.

If for any reason the cost of construction should be reduced, as through the substitution of steel frame for solid masonry, the height to which a building might economically be raised would naturally be increased. Let us suppose that the ninth floor, instead of costing \$160,000, represents a cost of only \$140,000. In this case a tenth floor, or even an eleventh, may be worth while.

If the cost of construction remains unchanged but the rate of interest on capital invested in buildings falls, a tenth or eleventh story would perhaps be a good investment. As has been indicated, a floor "pays" when the profits from its use are a fair return on the capital represented by the cost of the floor. If this fair return is figured at ten per cent., the ninth floor, costing \$160,000, must produce profits amounting to \$16,000. If the rate of interest is reckoned at five per cent., the same \$16,000 is a fair return on \$320,000—much more than the cost of the floor. Accordingly, with the lower rate of interest on building capital, there would be no reason for stopping with the ninth floor. A tenth floor may cost \$180,000 and yield a profit of \$12,000. This sum equals a five per cent. return on \$240,000. Another story may cost \$200,000 and yield a return of \$10,000. As \$10,000 is a five per cent. return on \$200,000, this story just pays.

Given a building already completed, no extension of business through increase in floor space is usually practicable. But the business is not therefore altogether prevented from expanding. Wide aisles and relatively few counters may give way to narrow aisles and numerous counters. A small number of salesmen may be replaced by a large number. It is not necessary to follow out in detail the effect of thus increasing expenses for salaries and for capital invested in counters and in stock. The first \$100,000

spent in thus expanding the business may pay very well; a second \$100,000 may also pay; but it will hardly yield proportionate returns; after a time the floor space is so well utilized that an additional \$100,000 expended in this way will not bring a fair return.

Just as in agriculture we found that the rate at which returns diminish varies for different crops, so in mercantile establishments with limited floor space the rate at which returns diminish varies for different lines of trade. Let us compare, in this respect, a tinware and a jewelry business. If the merchant dealing in tinware should double his stock, it is probable that he would crowd his store too much for convenience; but the increased business might make this profitable. A point would soon be reached, however, where further increase in stock would not pay. A jeweler, on the other hand, might double his stock, increase it three-fold, four-fold—perhaps ten-fold—without serious crowding of space.

We may now go over into other fields, to find other manifestations of the law of diminishing returns. In a certain city a street railway company, let us assume, has extended its lines of track through all the streets which promise any considerable traffic. The trackage is then a fixed element in the company's business, analogous with the land of the farmer or the floor space of the merchant. The variable elements are labor, fuel for power, and auxiliary capital in the shape of cars. We may assume—although not strictly in accord with the facts—that the cost of running a car is just the same whether one hundred cars are operated or one thousand. The cost of running one car we will place arbitrarily at \$2 a trip.

With one hundred cars in the entire system, running at intervals of twenty minutes, the company may carry an average of one hundred passengers per car per trip, thus earning \$5 at a cost of \$2. It is easy to see that the number of passengers carried would be increased if the service were

more frequent. Persons who have only a short distance to go will form the habit of walking, if the alternative usually means waiting fifteen or twenty minutes for an overcrowded car. Quite possibly the company would get twice as many fares with two hundred cars, running at intervals of ten minutes. The second hundred cars therefore would pay a handsome profit above the cost of operating them.

Imagine now that the company places a third hundred cars upon its lines, still further reducing the intervals between cars. In large measure these cars will simply carry passengers who would have been carried by the other cars; and this is of course no gain to the company. The greater efficiency of the system, and the greater comfort of riding in cars that are never overcrowded, will develop some increase in traffic. Possibly this increase will amount to fifty passengers for each of the new cars. This would mean, according to our assumed cost per trip, a gain of \$2.50 at a cost of \$2. An additional hundred cars may increase the number of passengers carried by an average of twenty-five for each additional car. This would represent \$1.25 receipts for every \$2 outlay, and would therefore be uneconomical.

Of course if costs of operation should diminish or if the number of potential passengers should increase, the service might profitably be improved still further.

The manufacturer, of one of our earlier examples, who erects a mill to utilize the power obtained by damming a stream, is limited in his operations by the power represented by the head of water. This is the fundamental limiting element in his calculations. But it is not to be supposed that the power which he will actually obtain is a definite quantity. Human ingenuity has devised no means whereby all the power actually resident in any natural source may be transmuted into a form which lends itself to use. All our devices for securing and transmitting power are imperfect, the best of them being only less wasteful of energy than the worst. Our manufacturer may install a mechanism which

costs little but permits a large part of the power to go to waste. Or he may install a more complicated and costly set of devices, which will come far nearer turning to account the whole power represented by the fall. We may then think of the manufacturer as weighing the advantages of different kinds of power plant. The expenditure of \$1,000 will permit the utilization of, perhaps, one-half of the power. A second \$1,000 may make it possible to utilize two-thirds of the power. With a plant costing \$3,000 perhaps three-fourths of the total power will be utilized. A \$4,000 plant may utilize four-fifths of the power, and so on. At what point will it be more profitable to let power go to waste than to incur additional expense to save it? One-half of the power may have a value of \$300 per year. Interest and depreciation on the \$1,000 necessary to obtain this power may amount to \$150. The value of the power which would be obtained through the \$2,000 plant, on the basis we have assumed, would be \$400; and the cost, figuring interest and depreciation as before, would be \$300. The simple plant therefore would yield a net value of \$150 above cost; while the more complicated plant would yield only \$100. It would accordingly pay best to install the \$1,000 plant. If the value of the power should double, however, the cost of the several kinds of power installations remaining unchanged, the \$1,000 plant would yield a value of \$600 at a cost of \$150, leaving a net gain of \$450; while the \$2,000 plant would give a power worth \$800 at a cost of \$300, leaving a net gain of \$500. The \$3,000 plant would yield a power worth \$900, but at a cost of \$450. The net gain is evidently diminished through the installation of the \$3,000 plant. The \$2,000 plant is, under the circumstances, the most economical available. It is easy to calculate that were the value of the power again doubled, the \$3,000 plant would yield the highest surplus above cost, and so would be the most advantageous economically.

Under present conditions it is an excellent steam engine

which transforms into mechanical power one-sixth of the energy of the coal which it consumes. A simple and inexpensive type of engine does not do nearly so well as this. At a given place and time, will it be more economical to employ an engine of the very highest type, and which naturally is very costly, or an inexpensive engine of a simple type? The former may transform into power fifteen per cent. of the energy latent in the coal; the latter, only five per cent. If the additional power obtained through the better engine does not equal the excess of interest and depreciation charge on the more costly engine, the simpler engine is the more economical in spite of its wastefulness, from the mechanical point of view.

The element in production which operates to limit the expansion of a given business may be capital in its general form, not any particular form of capital, as a given amount of land, a waterfall, a railway track. It is a fortunate business man who finds his capital limited only by the possibilities of profitable employment which he commands. In practical life a man can secure for use in his business, besides his own capital, only the additional capital for which he can give security. And this is usually limited to some proportion of the value of his own property.

Assuming that a manufacturer possesses a capital of \$50,000, and can borrow \$50,000 more, the sum \$100,000 limits his operations as narrowly as any other fixed element in his production could do. He has, of course, many choices as to the exact disposition of the capital. If he is engaged in cotton manufacture, he may use first-class machinery, or he may employ a poor grade of machines—perhaps machines that have been discarded in other sections, as was for a long time a common practice in the South. Perhaps he will decide upon investing \$50,000 of his capital in looms, the remainder being invested partly in the building and partly in materials, etc. With twenty-five laborers and high-grade looms, the output per laborer will be high; with

fifty laborers and lower grade looms, the output per laborer will probably be less, although the total output of the mill will be increased. A third force of twenty-five laborers with a still cheaper grade of looms will add something to the total output, but the output per man will be still further diminished. Perhaps the output per man, when twenty-five are employed, will be \$2,000, while wages, cost of material, wear and tear, etc., amount to \$1,600 per man, leaving a total net return of \$10,000. With cheaper looms and fifty men, the output per man may be \$1,900, the cost remaining \$1,600. This would leave a net return of \$15,000, and hence would be advantageous. Seventy-five men, with the capital put into appropriate form, might produce \$1,800 per man at the cost of \$1,600 as before; and this also would represent a return of \$15,000. One hundred men, with a return per man of \$1,700, would yield only \$10,000 net. Accordingly the most advantageous form in which to put the capital devoted to looms must be such as to employ between fifty and seventy-five men. If wages were less, a still cheaper loom would be the most advantageous. If in the examples given, labor and other costs had been \$1,000 instead of \$1,600, the net return from the mill equipped with the most expensive machinery would have been \$25,000; the return from the mill with the next lower grade, \$45,000; the next lower grade, \$60,000; the next lower, \$70,000. If we assume that with one hundred and twenty-five men the product per man would sink to \$1,600, such an arrangement of capital as would employ one hundred and twenty-five men would yield \$75,000 net. With one hundred and fifty men and a product of \$1,500 each, the net return would be again \$75,000. Any further increase in the number of men would sink the net return below \$75,000, and would therefore be uneconomical.

One further instance of the law of diminishing returns may be presented here. A farmer and his sons, having abundant means, migrate to the Canadian Northwest and

purchase six thousand acres of fertile land. But as land is to be had by *bona fide* settlers at very attractive rates, it would be difficult for the immigrating farmer to secure the services of hired laborers, even at very high wages, as every able-bodied man in the vicinity will wish to acquire land of his own by residence thereon. The inelastic element in our farmer's enterprise will, therefore, be labor. He will have to rely mainly on himself and on his own family for this element.

Under the circumstances, how much of the tract will be placed under cultivation? The farmer and his family may represent five able-bodied men. With steam plow and steam harvesting machinery it would be an easy matter, perhaps, for the family to place five hundred acres under cultivation. This area might yield ten thousand bushels of wheat. To place an additional five hundred acres under cultivation would perhaps be possible. With the larger field the plowing and the harvesting would extend over longer periods, and no doubt some of the crop would be lost. The total yield might, nevertheless, be fifteen thousand bushels. If an attempt were made to cultivate a third five hundred acres, very likely the work would be done so hurriedly and so much waste would be entailed, that the total yield would be only fourteen thousand bushels. The most profitable area to be cultivated by the working force of five men would therefore lie somewhere between one thousand and one thousand five hundred acres—far short of the entire tillable area purchased.

We may now state the law of diminishing returns in its general form. When any one of the several factors whose cooperation is essential to production is limited in quantity, either absolutely, or by conditions of increasing cost, while the quantity of the other factors may be increased practically without limit, every unit of increase in the variable factors results in an increase of output less than proportionate with the increase in the variable factors.

The mere fact that an additional unit of one of the variable elements yields a return less than that yielded by an earlier unit is no reason why the unit should not be employed. It may yield more than it costs, and therefore its employment is advantageous to the enterpriser. The product of a field with one laborer may be \$1,000, while the product of the same field with two laborers employed would be \$1,300. The gross gain to the enterpriser from the employment of the first workman is \$1,000, while that from the employment of the second is only \$300. Yet if wages are less than \$300 per man, the employment of the second man pays. As a general rule, the enterpriser will increase the variable factors in his employ as long as the increase in gross product resulting from the employment of an additional unit exceeds the cost of that unit.

The examples that have been given have all been drawn from the experience of the individual enterpriser. If we look at industrial society as a whole, we observe that the law of diminishing returns has a still wider application. Labor and capital may be thought of as the two factors cooperating in producing a vast mass of commodities—the social income. If one of the two factors remains fixed in amount, while the other factor increases, the aggregate product of society will increase, but not in proportion to the increase in the varying factor. As in a single enterprise, the product increases in proportion to the increase of either factor only when the other factor increases concurrently and in practically the same proportion.

One apparent qualification must be made at this point. Improvements in methods of production are constantly taking place, with the result that a given amount of labor or of capital increases in efficiency. If the amount of labor employed upon a hundred-acre field increases, the increase in product will not ordinarily be proportionate to the increase in labor. But if at the same time a new way of cultivating or fertilizing the soil should be discovered, or if the quality of

the seed should be improved, the product might very well increase relatively to the amount of labor. This fact does not prove that the law of diminishing returns is non-existent. It merely proves that there are other forces at work which may, at times, neutralize its effects. These forces are of course of the greatest practical importance, and will later demand our attention.

A more important qualification of the principle of diminishing returns consists in the fact that the very process of increasing the number of units of variable factors employed in connection with an unvarying factor may, under certain circumstances, increase the productive efficiency of each unit of the varying factors. To employ two men on an acre of land that could be cultivated by one would result in a diminished return per man if each worked alone. But many tasks may be better performed when two or more men cooperate than when each works by himself. Accordingly, it may happen that an increase in labor which makes cooperation possible, or an increase in capital which makes possible better methods, may be accompanied by increasing, instead of diminishing returns.

CHAPTER VII

THE DIVISION OF LABOR

In a frontier community, where almost the entire population consists of independent families living upon farms, the economic functions performed by each person are numerous and diverse. The frontiersman must, in the first place, be an agriculturist and a grazier. Each of these occupations includes numerous functions calling for different qualities, the agriculturist being a plowman, sower, reaper, etc. The frontiersman must also be a woodcutter at times, a carpenter, a mason, a cabinet-maker, a smith, a butcher, and a hunter, not to speak of a host of miscellaneous functions that he must occasionally perform. His wife probably has a no less varied array of occupations. She is a cook, a laundress, a sempstress, a dairymaid, a spinner, a weaver, a nurse, and a teacher. To survive on the frontier one must be a jack of all trades. And practically the same range of duties falls upon the strong and the weak, the intelligent and the dull, the man who quickly acquires skill and the man who acquires it with great difficulty.

Under such conditions it is natural that every kind of work should be performed but indifferently well. The house erected by a man who is usually occupied in tillage may afford comfortable shelter; that it will have any great degree of convenience or beauty is improbable. The cloth woven by the frontiersman's wife will necessarily be coarse and lacking in finish. The tillage of the field and the management of the household will be conducted less satisfactorily than they would have been if the farmer and his wife had not had so many other matters to divert their attention and energy.

Not only will the quality of the work performed under

such conditions be poor, but it will also entail a relatively high cost in labor. The frontiersman does not work for a sufficient time at any one thing to acquire the "knack" of doing it—that is, such a habit of mind and muscle as will give the work a semi-automatic character. If he hews beams for a house, it will, at first, be only by the greatest effort that he will hew true to the line. A great deal of time will be lost in smoothing out the irregularities of surface due to unskillful use of the ax. A second beam is hewn with a less expenditure of time and labor than the first; a third with still less. But by the time a reasonable degree of skill is attained, all the beams are hewn, and there will be no further use for the acquired facility in this line for several years, when it will largely have disappeared through disuse.

Another disadvantage under which the frontier economy suffers is the waste of time involved in passing from one task to another. The frontiersman may want meat, and so be compelled to interrupt the labors of the field in order to kill. With his low grade of skill as a butcher, this operation may take him three-fourths of a day. To return to the field for the remaining fraction of the day would hardly seem worth while. And so our frontiersman will "potter around," trying to find some neglected task about the house or barn, which might almost as well never be done, or will decide to rest from his labors.

Of course some families will prosper better under the circumstances than others. Some men will excel in one function, some in another, and those who excel in the functions that happen to be most vital under the conditions will have the greatest degree of success. Some will be utter failures, wasting so much time turning irresolutely from task to task that they accomplish nothing. These same men might have proven highly efficient workmen under different industrial conditions. If our frontier communities had kept detailed records, we should find that they contained many a

man who would have made a good architect or engineer, many a woman who would have made an excellent modiste or teacher, but who proved hopeless failures in the environment in which they were placed. Architecture and engineering, designing of costumes and teaching of children, were indeed functions not wholly neglected, but they made up a very small part in the life of each family and gave little opportunity to any one for the full development of his natural talents.

Were the frontier community wholly isolated for many generations, a transformation of its industrial organization would gradually take place. A person with more than the ordinary talent for building would be called upon to assist in the construction of his neighbors' houses, receiving in return assistance in work for which he had no special qualification. Little by little, occupations would be differentiated, and eventually the community would contain among its population carpenters, smiths, masons, weavers, etc. While these craftsmen might still own land, and spend their odd hours in agriculture, the main source of their livelihood would be the exercise of their several crafts. Division of labor in its simplest form would thus have come into existence.

Whether this division of labor could be carried far or not would depend in large measure upon the growth of population and wealth in the community. Good work must be appreciated before wages will be offered which are sufficiently attractive to induce men to devote all their time to the crafts. There must be a wide enough demand for such labor to keep the craftsman busy most of his time. If a dozen houses are built every year, a carpenter may find steady employment; if the community is so small that only one or two houses are built yearly, no one can make carpenter's wages his chief reliance. The community must be of a considerable size before any man can earn his livelihood as a smith. Weaving carried on as a regular occupa-

tion likewise presupposes a fairly advanced condition of society.

But, of course, our frontier community would not remain thus isolated for generations. Traders would soon appear, to carry away the lighter surplus products, giving in exchange the manufactured goods of older communities. A railroad would, in time, transform the frontier community into an integral part of the civilized world. And this might retard the progress of division of labor within the community. Instead of weaving its own cloth, it would barter its surplus products of the soil for textiles produced in other parts of the world. Many functions, however, would have to be performed on the spot, and these would leave occasion for a considerable division of labor.

As the community advanced in numbers and wealth one function after another would be taken out of the province of the man of all work, and given over to persons specially qualified by nature and training to perform it effectively. Each trade, again, would tend to subdivide. The carpenter would no longer plan the building upon which he worked, this function being given over to the architect. The planing of boards would cease to be a part of the carpenter's work, as planing mills would be established which would do the work far more economically. Even in agriculture some differentiation would take place, one man devoting himself chiefly to the growing of grain, another to raising vegetables, etc. Owing to the seasonal character of agricultural labor, however, and the advantages of combining crops in such a way that the work may be distributed as evenly as possible throughout the open months, specialization in agriculture could not be carried very far. Indeed, even in the best developed agriculture, we do not find some farmers specially devoted to wheat culture, others growing nothing but corn, others potatoes or turnips. Agriculture by its nature precludes a high degree of division of labor.

We may now proceed to a statement of the conditions

under which division of labor can take place. The first of these is the existence in a community of a sufficient demand for a particular kind of work to make it possible for a man to devote himself almost entirely to that kind of work. It has been pointed out that a considerable number of houses must be erected every year in order to call into existence the carpenter's trade. The local demand for well made clothing must be fairly extensive before clothes-making can detach itself from the province of the housewife and take the form of a separate trade.

If the demand for well made clothes becomes very great, opportunity for still further differentiation, within the tailor's trade itself, may arise. One man may devote himself exclusively to the making of overcoats, another to the making of coats or waistcoats. The making of a single garment may be further split up among different workmen, one occupying himself with the fitting of garments, another with cutting, while the sewing may be distributed among several persons, each doing the work for which he is best fitted. Similarly, if the demand for furniture is extensive, one man may devote himself entirely to the making of chairs, another to the making of desks; or one man may specialize in the making of plain articles of ordinary use, while another makes only fine pieces.

Where the producer of a commodity deals directly with the consumer, the opportunity for minute division of labor is not so great as where the producer is brought into relations with the consumer through the intermediation of a general market. The amount of work that may be secured by a single custom tailor's shop is limited by the number of purchasers of custom-made garments within easy distance. In a village this number may be so small that anything like subdivision of the tailor's trade may be impracticable. In a large city the case is different. A single shop may easily find customers enough to keep twenty men at work. In the latter case division of labor is entirely practicable. If transit

facilities in the large city are excellent, the number of men that may be employed by a single tailoring establishment may be one hundred or more, and labor may be as minutely subdivided as the employer may desire. In the making of furniture at the order of the consumer, similar limitations upon division of labor are found, the small town being able to support only a small shop, where all the work is performed by two or three men, while the large city renders possible the large shop, with minute subdivision of labor.

Division of labor finds its highest development where the nature of the commodity produced is such as to permit the easy assembling of materials in one place and the sale of the finished product throughout a wide area. Thus the materials for an ordinary grade of cotton cloth may be assembled in almost unlimited quantities in a New England town, and the finished product may be sent without great cost to any part of the world. Division of labor in a cotton mill will be hardly at all subject to limitations of the kind that we have discussed. Ordinary grades of furniture may likewise be manufactured by one establishment without regard to limitations of the local market, and the division of labor in such an establishment may be carried as far as the inherent advantages of the system may urge. The business of making ready-made clothing may be cited as another case in which the intervention of a general market has made possible minute division of labor. How great is the revolution in methods that has been brought about by this divorcing of the producer from the consumer, through the development of the general market, may best be brought home to us by contrasting the methods of the local cobbler, making shoes to order, with those of the modern shoe manufacturer, supplying a world market. The work which the cobbler performs in making a shoe is, in the factory, split up into over a hundred different functions, each being performed by a separate set of workmen.

The contrast between the two systems, that of the small

shop with hardly any division of labor, and that of the large establishment with labor minutely subdivided, may be seen in many industries that are at present in a stage of transition from the former system to the latter; and in most cases the transition is largely explainable by forces that have rendered the producer independent of the local consumer. Until refrigeration had been reduced to a science, and the methods of transporting products preserved by ice had been perfected, every locality depended, for its supply of meat, upon the local butcher. If the consumers in the vicinity were few, they were ordinarily supplied by small shops which permitted only a low degree of division of labor. In the cities, the shops were larger, and division of labor was carried farther. To-day there is almost no limit to the market for a single establishment. Fresh mutton killed in New Zealand and Australia finds a ready market in England. Fresh meats from Chicago may be found in practically any city or town in the land. The parallel development of live stock transportation has given the slaughtering centers a practically unlimited supply of raw material. Accordingly a minute division of labor has been evolved in the slaughter houses. In the Chicago slaughter houses the killing and dressing of a bullock is subdivided into fifty or sixty separate functions, each assigned to a separate set of workmen, each set making some small change in the material and passing it on to another set. Of course some functions are performed by single workmen, some by several. The laborers are organized in gangs of 230 men, each gang containing just the appropriate number of men of each class.

The extent to which division of labor may be carried depends also upon the prevailing form of the economic organization. Where each workman is his own employer, as was generally the case in the mediæval industrial organization, labor cannot be very minutely subdivided. In such an industrial organization the spinner buys his wool and sells his product to the weaver; the latter sells the cloth to the

fuller, who, in turn, sells it to the dyer. The product is again sold, perhaps, to the shearer, who may in turn sell the finished cloth to a draper, who deals directly with the consumer. With such a form of organization much time is necessarily wasted in the buying and selling of the material in its several stages, and the greater the number of stages, the greater the waste from this source. Again, as each person follows his own taste in choosing his trade—subject, of course, to family tradition and trade restrictions—it is unlikely that the society will have just the right number of craftsmen of each kind. At one time there will be too many spinners, relatively to the number of weavers; at another time fullers will be so numerous that not all can be employed. And this element of waste also increases with increasing subdivision of labor.

Where, on the other hand, industry is carried on under the factory system, the workmen all being assembled under one roof, subject to the control of an employer, the material passes through the shop without interruption, and apprentices are taken on in each branch in the proportions which experience shows to be most desirable. Of course this implies a large accumulation of wealth on the part of the employer, who must provide the premises, furnish materials, pay wages, and assume all other expenses of production. In fact, we may say that large capital and efficient management are prerequisites to a thoroughgoing system of division of labor. And, of course, efficient management on the part of the employer implies a corresponding readiness to submit to direction on the part of the employee. We might easily conceive of a society in which all other conditions requisite to division of labor might exist, but in which division of labor of an advanced type would, nevertheless, be impracticable on account of the restlessness of the working population under close direction.

The fact that division of labor is so generally employed wherever the conditions are ripe for it is a sufficient indica-

tion that the system must offer important economic advantages. To enumerate all these advantages would require a volume; but we may group the more important ones under a few heads. In the first place, the limitation of the labor to be performed by one man to a single function, which involves the use of a single tool, and which may be reduced to a few simple movements, makes possible accurate workmanship and great speed, with relatively little weariness. The workman soon reduces his movements to a rhythm; he grasps each piece of material in the same way, delivering his blows upon it in such a way as never to throw away his energy. Every one knows how much better results a trained oarsman secures from the expenditure of a given amount of muscular energy than the raw beginner, who puts forth his strength now on the water, now on the air, now in the right direction, now in the wrong one. The difference in effectiveness between the strokes delivered by the man who works with a single tool, and the strokes delivered by one who works with a dozen tools, is hardly exaggerated by the comparison.

The best workman loses some time in changing from tool to tool. It is not difficult to find a carpenter who spends many fruitless moments searching now for his saw, now for his hammer, while the whereabouts of the plane or square, when these implements are needed, proves a baffling, if not insoluble problem. And this is the man who leaves his work with the loudest complaints of his weariness. A division of labor that holds a man so strictly to business that he never has any chance to stop to search for anything, obviously contributes materially to reduce such waste of time and energy.

Division of labor makes it possible for persons who have not the time or the versatility to learn how to perform a variety of functions to attain to a place of usefulness in industry. There are many persons who have not the time to learn the tailor's trade; many who have the time for apprenticeship, but not the general ability required for the

making of a well-fitting coat. Few persons are so stupid that they cannot, with slight waste of time, learn how to sew a straight seam. If the work of making a coat is distributed among a dozen persons, each one can quickly learn to do his particular part well. Further, in the distribution of the work, each one may be given a task proportioned to his ability. The skilled cutter will not waste his time picking basting threads, and the person for whom the latter function is a sufficient profession, will be kept from spoiling material through attempting something more ambitious.

The simplification of the task of each laborer makes it a comparatively easy matter to ascertain how much any particular one is actually getting done. One who has lived in the country has probably made the acquaintance of two types of laborers: the first, those who are always bustling about in a hurry and yet accomplishing little; the second, never in a hurry, yet showing, in the end, a good record of achievement. Because of the miscellaneous character of the work of the agricultural laborer, it takes a long time to measure the relative efficiency of different men. Where a man is compelled to repeat the same operation throughout the day, no show of bustling energy will create the illusion of achievement. The pieces of work done have simply to be counted, to give an accurate idea of the laborer's efficiency. It is obvious, then, that the difficulty of supervision is greatly reduced by systematic division of labor.

Perhaps the greatest advantage that arises from division of labor is the stimulus it gives to the invention of labor-saving machinery. A hundred years ago it would have seemed quite impossible to manufacture shoes largely by machinery. The process of manufacture appeared so complicated that hand labor alone would answer. To-day shoes are largely the product of machines. Many forces cooperated, of course, to bring about this result, but only one of these concerns us here, the division of labor. When a complicated operation like the making of a shoe is split up into

several score of simpler operations, some of these are likely to prove so nearly mechanical that the idea of machines to take over the work suggests itself. If the process of production is divided into twenty-five parts, perhaps the third, and eleventh, and seventeenth are taken over by machines. In time division of labor still further simplifies the remaining operations; additional ones prove themselves to be fitted for machine work, and thus more of the hand-workers are displaced. It is conceivable that in the end practically the whole process might be taken over by machines, the hand-worker being transformed into an attendant of the machine, so to speak, feeding it with material, and passing on the product to another machine.

We may now consider how far the principle of division of labor modifies the operation of the principle of diminishing returns, described in the last chapter. According to that principle, an increase in the amount of labor employed in connection with a limited amount of capital gives a return which is not proportionate with the increase in labor. But what if the additional laborers give opportunity for division of labor which had not before existed? Suppose that a tailor's shop with a capital of \$20,000 formerly employed six men; it now employs twelve men. Division of labor can be carried farther with twelve men; hence is it not possible that the employment of the second six men will double the output of the shop? This is quite possible. An additional six men will give occasion to more systematic division of labor, and so many still further increase the efficiency of each man. And so with a fourth set of six men. But it is evident that one cannot go on indefinitely subdividing the work of making a coat. Eventually a point will be reached where further subdivision of labor increases the efficiency of each laborer only slightly; still further subdivision, even less; finally a degree of subdivision will be found that will not pay. That is, the principle of division of labor is itself subject to diminishing returns. A practical proof of this fact is

to be found in the organization of the working force in many large establishments where much use is made of division of labor. The making of a complete article is not assigned to a single man; nor is it assigned to all the men in the shop, each contributing a trifling modification to the material. Each article is assigned to a "team," among the members of which the successive manipulations of the material are distributed. The entire working force may contain scores of teams. Now the size of each team indicates the limits upon profitable division of labor. If an enterpriser limits each team to sixty men, this is proof that in his opinion a team of seventy men would not show so large a product per man.

We may grant that an increase in laborers employed in connection with a given capital may possibly result in an increase in product more than proportionate with the increase in labor. This may hold true until the number of laborers is sufficient to compose a team of maximum efficiency. If an additional team is engaged, without increase in capital, it is doubtful that returns will increase in proportion to the number of teams; a third team will show a return less than that of the second, and so on until the point is reached where it does not pay to employ an additional team. So far as the principle of division of labor is concerned, then, the only qualification to be made in the law of diminishing returns is that when we assume that labor increases, we must assume that it increases by teams, not by individual men.

CHAPTER VIII

THE CONCENTRATION OF INDUSTRY

It is a matter of common observation that it requires a larger capital to launch a business to-day than was required twenty years ago; and most men believe that twenty years hence a still larger capital will be required to give an establishment a fair start. This tendency toward ever larger establishments is what is commonly known as concentration of industry, or industrial concentration.

At the outset, the fact must be noticed that not all branches of business are equally affected by the tendency toward industrial concentration; and that even in the branches that show the best instances of this development, many establishments are checked in their growth by the difficulties they experience in extending their control over certain of the essential factors of production. In agriculture, for example, there is little evidence of any such tendency. In that industry, an important element in success consists in keeping the dwelling place of the laborers so near to the fields that no great amount of time is wasted in going to and from the work. It is also essential that the barns and granaries be near enough to the fields to obviate excessively long haulage of the products. It follows, then, that the number of acres that may be managed from a common center is somewhat narrowly limited. An apparent exception to this rule is to be found in the great wheat farms of California, the Dakotas and the Canadian Northwest. Here the land is level and free from stones and stumps of trees; the natural fertility is great, and evenly distributed over large areas. Cultivation consists simply in plowing, sowing and harvesting; and this can be done by aid of the highest type of agricultural machinery. As soon as the natural fertility

of the soil is exhausted, however, a more intensive tillage will be necessary; fertilizers will have to be applied; rotation of crops will succeed continuous wheat-cropping. For such tillage the immense unbroken fields are not well adapted. The "bonanza" farm is a transient as well as an exceptional phenomenon.

In many sections of the country the making of bricks remains in the hands of small enterprisers. Common bricks are so bulky a commodity that they cannot be transported long distances without paying an excessively high charge for freight—unless made in a locality specially favored by water or cheap railway transportation. The size of a brick-making establishment, then, must ordinarily be gauged by the demand for bricks within a reasonable radius of the kilns; and if this demand is not a growing one, there cannot appear a tendency toward larger brick-making establishments.

Somewhat analogous is the case of the local merchant. Those persons living within a reasonable distance of his store can be reached by his order clerks and delivery wagons. Beyond this distance, however, it will not pay to solicit orders. If the population within the radius of profitable business is large, of course the store may be large. If the region is sparsely settled, the store must be small.

Instances of businesses thus limited by external circumstances might be multiplied. We may say, in general, that such limitations arise wherever either materials of production or the finished product must be conveyed increasing distances, with rapidly increasing cost, whenever an establishment enlarges its business. Of course anything that reduces cost of conveyance materially enlarges the area within which a given business is confined. The advent of the gasoline motor delivery wagon has enabled some village "general stores" to develop into more ambitious "department stores."

Again, when a business is once established, it may not admit of any great degree of expansion, even if market conditions are favorable. A shoe factory, for example, may

find a practically unlimited demand for its products at remunerative prices. By a rearrangement of its machinery, and the employment of additional laborers, it may somewhat enlarge its output; but, as we saw in Chapter VI, this process cannot long continue without calling into operation the law of diminishing returns. A new factory may be established alongside the old one; but the advantages to be gained from such duplication of plant are inconsiderable as compared with the advantages that would have arisen could the old factory have been completely remodeled on a larger scale.

The advantages to be gained through industrial concentration are best brought to view by an examination of the considerations that determine the size of a new establishment in an industry which is only slightly dependent upon local conditions of supply of material and consumption of product. Such independence of local market conditions is most commonly met with in industries which work up materials that can easily be assembled in large quantities, and the products of which are of such a nature that they can bear the expense of transportation to distant markets. The textile and the iron and steel industries may be regarded as typical of the branches of production giving the best opportunity for industrial concentration.

Let us imagine that we are present at the launching of a new enterprise in one of these branches of business. What will be the size of establishment determined upon? Of course a first consideration must be what amount of capital can be raised. If, however, it is generally believed that with a capital of \$500,000 an establishment in a given industry can prosper, while one with a capital of \$100,000 would with difficulty survive, it is likely that an enterpriser proposing to start the larger business will find less difficulty in raising the capital than would an enterpriser proposing to found a \$100,000 business. The real determinant of the size of a new establishment, then, will be, not the financial consideration

as to the amount of capital that can be raised, but the technical consideration as to how much capital is necessary for success. If this amount cannot be raised the project is dropped.

As we saw in the last chapter, manifold advantages spring from the division of labor. The establishment to be launched must be at least large enough to make the fullest practicable use of this principle. Perhaps this end would be attained, so far as the working force directly engaged in the process of manufacture is concerned, in an establishment with a capital of \$100,000 and with 100 laborers. A second 100 laborers, supplied with an equal amount of capital, might double the output, but they would not increase the efficiency of the first hundred men. So with a third and fourth hundred men. No further economy in concentration arises under this head.

In addition to its manual laborers, the establishment must have an "office" force; possibly it may have buying agents, who travel long distances in search of the various materials, and selling agents, likewise compelled to travel about in search of buyers. A small establishment could support only a small number of employees of these classes; there could be no extended division of labor among them. An establishment of larger size might be able to assign one man exclusively to the purchase of one kind of material, another to the purchase of another kind, and so enjoy the advantages of specialized skill. Similar division of labor might be effected among the selling agents and among the members of the office force. In this way a very large establishment could assure itself that every commercial situation arising would receive expert attention. There is, of course, no theoretical limit to the possible gains from this source. An establishment might be so large that it could have a man devoting his full time to the purchase of machine oil for its use, and something would doubtless be gained through the skill he would develop. But in practical life such trifling

gains would have little effect in determining the size of an establishment. They are too small to make a perceptible addition to dividends.

The process of manufacture may involve a score or more of manipulations of the material, and at each stage several machines may be drawn into use. A number of different types of machinery are on the market, some performing the function required with greater celerity and certainty than others, the better machines, naturally, representing a larger investment. To equip a factory throughout with the best machinery would require a large capital, even if the process could be reduced to a series of steps occupying one set of machines as long as another. Such a division of the process is not ordinarily practicable; some machines contribute only very slight changes in the material, delaying it but a moment as it passes through, while other machines subject the material to more important changes and delay it for a longer period. In order that the machines may all be used to their full capacity, there must be a number of machines engaged in the slower parts of the process to one engaged in the part which can be performed quickly. And this involves a still further increase in the capital of the establishment.

The providing of power, in most manufacturing industries, is one of the most important of technical problems, and here the large establishment usually has decided advantages. The larger the power plant, in general, the cheaper can power be furnished. There is not so much heat wasted in a large furnace as in a small one; a large power plant can be so arranged as to prevent much of the waste of power in transmission that usually takes place in a small establishment. Here it would be difficult to find a theoretical limit to the advantages that follow from an increase in size of plant. In practice, however, the economies to be gained in this way are not very important after a moderate size of plant has been reached. We do not find men constructing huge factories merely to obtain the advantages of cheaper

power, although these advantages may not be entirely neglected in determining upon the size of a business to be established.

In most industries, the general progress of invention is in the direction of more and more costly machines, and this is one of the more important reasons for the trend toward industrial concentration. At a particular time, however, there is a theoretical size of business which permits full equipment with the best machines then available. An increase in the establishment beyond this point brings no advantage in the direct process of manufacture. There may, however, be other important advantages to be gained through such enlargement of plant.

In almost every industry the material undergoes some shrinkage in the process of manufacture, through the removal of parts not fitted to enter into the main product. These parts are waste in a small establishment, and the problem of getting rid of them is often a serious one. In the large establishment they accumulate in enormous quantities, and the question whether they could not be utilized in some way readily suggests itself. Through successive experiments, one element after another ceases to figure as waste, being transformed instead into a "by-product." Thus forty years ago much of the residue of the small oil refineries was allowed to flow away in the streams. The same material to-day is the basis of scores of by-products, the value of which is an important element in the profits of the petroleum industry. Compare the methods of waste disposal of the small butcher shops of to-day with those of the great packing houses. To the former from forty to sixty per cent. of every animal slaughtered is sheer waste, to be got rid of in whatever way the public health authorities will permit. This waste in the large establishment is transformed into over a hundred by-products, practically no part of it being considered wholly valueless. Such utilization of waste requires the investment of a considerable capital in various kinds of

plant and the employment of a large body of laborers who have nothing to do with the main product. Some of the by-products take from the mass of waste only insignificant elements; hence their utilization is possible only when waste accumulates in enormous quantities. It is obvious that only a very large establishment can carry on a thoroughly systematic plan of developing by-products. An establishment large enough to enjoy all the advantages of division of labor and of costly machinery may not be one-tenth large enough to gain all the profits of waste utilization.

It has already been pointed out that an important advantage of the large establishment is the possibility of organizing its buying and selling agents in such a way as to develop special skill for each kind of transaction. A further commercial advantage consists in the fact that purchases can be made on a large scale, and therefore, generally, on especially favorable terms. The dealer in raw material can afford to sell at an unusually low price to a customer whose purchases may mount up into millions. The same thing is true of all other dealers who supply the large establishment. There may, indeed, be a combination among such dealers, fixing the margin of profit at which each must sell; but such a combination can do little toward extorting high profits from an enterpriser who can, if he chooses, dispense with the middlemen altogether, and deal directly with the producer of the materials. The maker of machinery is likewise compelled to content himself with a small profit when dealing with a concern which has capital and enterprise enough to make its own machinery, if it finds a profit in so doing. In its sales, it enjoys similar advantages. It can provide any purchaser with such quantities and such qualities as he may desire. If part of the product is to be exported, the large establishment can afford to send agents to foreign countries to find out what qualities are desired, and in what form the product will be most acceptable to the foreign taste.

The large enterpriser, further, can make a more sys-

tematic study of the market than can the smaller one, and so can make his purchases and sales when the markets are most favorable. Moreover, the products of the large establishment are usually transported more cheaply than those of the smaller establishment. Practically all supplies, even those that form a relatively insignificant part of the total purchases, can be taken in carload lots; the more important supplies in train loads, perhaps. Where the transportation companies are not prohibited by law from making excessive reductions in favor of the large shipper, the latter can often force the transportation company to discriminate heavily in his favor, under threat of giving the entire business to a rival company. And even where the transportation company is required by law to treat all its patrons alike, the large establishment is likely to get special favors from the company, under one pretext or another. In sea transportation, the large company may build ships of its own, especially adapted to its needs, if ship owners are not ready to make suitable concessions.

No matter how large the capital of an enterprise may be, there will at times be need of borrowing money. At a particular time the market for materials may be so favorable that it will be profitable to purchase large supplies beyond current needs. An active business will not have on hand any large amount of idle cash; hence the necessity for borrowing. As a rule bankers lend money at a lower interest rate to a large enterpriser than to a small one. The principal reason why they do this is that the large establishment appears to offer better security than the small one.

The foregoing is of course very far from an exhaustive statement of the advantages of the large enterprise as compared with the small one. Other advantages will readily occur to any one who observes the economic development of the locality in which he lives. It will be observed that some of the advantages are prominent in one industry, some in another. In the manufacture of cotton cloth, for example,

there are no important by-products to be utilized. The market for ordinary grades of cloth is well developed; the jobber takes the product from the manufacturer's hands and disposes of it to the retailer, charging a commission so low that it would hardly pay the manufacturer to develop selling agencies of his own. Neither the material nor the product is very bulky, in comparison with its value; hence the advantages enjoyed by the large concern in the matter of freight transportation are not likely to be of very great importance. To equip a mill thoroughly with the best machinery in the market does not require a very enormous capital; nor does an establishment have to be very large to enjoy to the full the advantages of division of labor. Certain advantages do indeed attend mere size, even in this industry; but they are not so important that they may not be counterbalanced by slightly better management on the part of the smaller establishment.

In the iron and steel industries, on the other hand, a complete equipment of machinery is usually very costly, requiring a large capital to keep every important machine in constant use. The transportation of materials and products is expensive, and a great part of the profit of an establishment may depend upon the kind of contract that can be made with the transportation companies. By-products are not very important, but the larger establishment can secure large economies through making the best use of its material. Fuel is of course an immensely important item in the industry, and decided advantages are to be obtained through purchases on a large scale. Furthermore, the larger the establishment the greater the economy possible in the use of the fuel. Accordingly, in this industry a very large plant will have substantial advantages over one of moderate size. In the meat packing industry, so far as the use of machinery is concerned, there is no important advantage enjoyed by the very large plant of which a plant of moderate size could not avail itself. Economy of fuel is another minor con-

sideration in this industry. The important advantages of the large plant consist in better division of labor, better utilization of by-products, better conditions of transportation, and more effective advertising. In the refining of petroleum almost every form of advantage that has been mentioned favors the large establishment.

It is not to be inferred that the advantages of the large establishment are confined to manufacturing industry. Mercantile business shows much the same tendency toward concentration. In the retail trade, the large establishment enjoys great advantages in the purchase and sale of goods; it not only buys more cheaply, but it is better able to cater to the tastes of its customers than the small store. It can afford a style of advertising that reaches the public, while the small establishment is likely to throw away the money it spends in advertising, not succeeding in imposing the conviction of its merits upon the prospective customer.

Theoretically it is difficult to establish a point beyond which further enlargement of a business establishment would be unprofitable. Every enlargement of a petroleum refinery, for example, makes possible some new economies. After a certain size has been reached, however, an establishment is able to enjoy most of the known advantages of large scale production. In some industries this involves an investment of \$500,000; in other industries, perhaps, of \$50,000,000. A capital of such size the enterpriser will vigorously strive to bring together. A profitable business may perhaps be conducted with a much smaller capital; but it will be more and more seriously handicapped as time passes, and the average size of new competing establishments increases.

There is of course no reason why an establishment should not be much larger than is necessary to obtain practically all the benefits of large scale production known at the time. Say that a \$2,000,000 plant offers all these advantages, there is no reason why a \$4,000,000 or a \$6,000,000 plant should not be established. But capital cannot be got together without effort; and unless substantial advantages are

to be gained through the larger investment, the enterpriser is likely to rest content with the smaller one.

As we have seen, the expansion of businesses already established, in whatever branch of industry, is confined to narrow limits by the law of diminishing returns. There is a similar law which confines within narrow limits the size of a new enterprise in an industry dependent upon local supplies of material, or a local market for its products. With such enterprises, a point is reached where increasing business is attended by increasing cost, transportation generally representing the expanding element in cost. Finally, we have the new enterprises in industries which are practically independent of local supplies of material and of the local demand for products. In these enterprises we may assume that no element in production is as yet fixed. They may, within limits, assume such magnitude as will give them command over all the economies of large scale production. These economies have a determining importance in the choice between a small business and one of moderate size; they are of less importance in the choice between a moderate sized establishment and a large one; with further increase in size of establishment their importance dwindles. Perhaps there is no point at which further economies cease; but there is a point at which they cease to be of practical importance. In economic language, the economies from concentration of industry are subject to a law of diminishing returns.

CHAPTER IX

THE GENERAL LAW OF WAGES

We have found frequent occasion in earlier chapters to touch upon wages and interest. Wages and interest are parts of the cost of production of commodities, as we saw in Chapter V, and as such have an important part to play in determining values. As incomes of great social classes, they are, however, of far greater importance. In the present and the following chapters we shall endeavor to ascertain the laws determining the rates of wages, interest, and whatever other forms of social income may remain after the shares of the laborer and of the capitalist are paid. In other words, we are entering upon a study of the distribution of wealth, or, more properly, of the distribution of the social income.

Political economy, like most other sciences, often finds reason for defining terms the general meaning of which has been known to us all since childhood. Who is so innocent of the realities of life that he does not know in a general way what is meant by the terms "labor" and "wages"? Nevertheless, it is still possible for intelligent persons to fall into fruitless dispute over the "rights of labor," when one means one thing by labor, another a different thing. The possibility of mistaking the meaning of one who talks about "wages" is still greater. One independent farmer will say that the thousand dollars he obtains for his produce is "wages"; another will say that it is mostly the rent of his land; still a third will regard the same income as chiefly profits. Such conflicting use of terms may be a matter of indifference in ordinary conversation, which is mainly designed to furnish entertainment, not instruction. Scientific discussion, on the other hand, demands first of all perfect agreement in the use of terms.

Every expenditure of human energy having for its chief purpose the production or the preservation of economic goods, or the increase in the valuable qualities of existing goods, is labor in the economic sense of the term. Labor includes not only the exertions of the manual workers, by whom actual changes in material commodities are wrought, but also the exertions of the foremen, superintendents, managers, under whose direction the manual tasks are advantageously performed. It includes the activities of police, of judge, and of legislature, upon whose efficient performance rests the possibility of continued production in most of the existing branches of industry. Labor does not include, however, efforts undertaken for their own sake, without regard to economic result. The amateur football team spends an immense amount of energy, and gets its reward in the spending. The amateur hunter often cares little or nothing for the birds he brings down; his reward is the gratification of the prehistoric thirst for blood. The professional football player and the professional hunter, on the other hand, are laborers. If any one thinks that this is a distinction without a difference, let him ask the football amateur what claim to superiority he enjoys over the "professional"; let him ask the sportsman wherein the latter differs from the pot-hunter.

As the term "wages" is generally used, it signifies the money or other things of value paid by an employer to those who serve him in capacities of inferior dignity; employees of higher rank receive "salaries." Political economy does not recognize any such distinction as this, based as it is upon the pretended social status of the recipient, rather than upon a difference of economic function. The ten cents a day paid to a child slave and the \$100,000 a year paid to the president of an insurance company are alike wages in the blunt speech of the economist. Moreover, in economic language, the term "wages" extends to part of the income of a workman who is his own employer. One peanut vender may be working for a push-cart enterpriser, receiving a dollar a day for his ef-

forts. This sum, all will agree, is nothing but wages. At the opposite corner of the square you may find another peanut vender, who is his own employer. The latter may gain over and above the cost of raw nuts, gasoline, push-cart hire, etc., just a dollar a day. The two men then receive equal rewards for identical services. Possibly the second vender calls his income "profits." Political economy cannot afford to use two different terms to designate essentially the same thing, especially when one of the terms, "profits," has a very definite meaning of its own. Whatever a man receives simply as a reward for his exertions, whether directly or through the intermediation of an employer, is wages.

While we cannot properly exclude from the term wages so much of the income of an independent workman as arises from his personal exertions, we are nevertheless justified in devoting our attention almost exclusively to wages as determined by contract between employer and employee. An increasing proportion of the world's work is being done under this system; and most of the important economic problems of the day are concerned with it. Who ever heard of a "labor problem" in an agricultural community where every farmer relies exclusively on his own two hands? In such a community, what importance attaches to the general movement of wages, whether upward or downward? Indeed, who can determine, in such a society, how much of the total income of each farmer is wages, how much interest on capital invested in the farm? Wages have existed ever since our first ancestors were condemned to eat their bread in the sweat of their brows; but it is only under modern conditions, where one man pays another to work for him, that it comes to be of great importance to ascertain what laws govern the rate of wages. We shall therefore confine our study to that part of the economic field in which differentiation between employer and employee has taken place—where the "wage system" exists—and shall endeavor to ascertain the laws operative therein. These laws, indeed, exert an in-

fluence in the rest of the economic field as well, and are in turn influenced by forces lying outside of the field in which the wage system prevails. What a man could get as his own employer helps to determine how much he must have as a mere wage-earner; what he could get as a mere wage-earner helps to determine what he must gain as an independent workman.

Let us set before us, in imagination, an agricultural community in which all the land is owned by a few wealthy men who do not themselves engage in tillage, but hire the landless population to work upon their fields. And let us further assume that this population is unable or unwilling to migrate to other communities in search of employment. Whether there are many workmen or few, they must all seek employment upon the land, or starve.

Some of the land in the community will naturally be fertile, some of it barren. Some of it will require a large expenditure of labor for every bushel of wheat or potatoes produced; some of it will yield rich crops with little labor. Every good field will yield a moderate crop with a small expenditure of labor; if a larger crop is sought, it must be at the expense of a disproportionately large application of labor, as we saw in the chapter on Diminishing Returns.

Accordingly, we may safely lay down the proposition that the results arising from the application of labor to different fields, and in different methods of cultivation, will be unequal. Good land, in extensive cultivation, may yield three bushels of wheat per day's labor expended, while poorer land would yield, perhaps, two bushels and yet poorer land one bushel. Adding one day's labor to the amount previously spent on a piece of the best land, may add only two bushels to the product, and adding still another day's labor may add only one bushel.

Now, however unequal the results of labor on different fields and under different methods of cultivation, the reward of labor—wages—will be uniform, allowance made, of

course, for differences in the physical efficiency of different laborers. Suppose that a farmer has ten fields, of different degrees of fertility, and employs one man to cultivate each, the work on the different fields being uniformly arduous. He would be a very unusual employer if he should propose to pay the men different rates of wages, according to the fertility of the field upon which each is employed. The probable result of such a plan would be that competition would arise among the men to win the employer's favor, each one desiring to be employed on the best field; and in the end we should probably find that the better fields would be apportioned to the men who would agree to perform for the employer various miscellaneous services which would, generally speaking, be equal in value to the advantages they enjoyed in the way of higher remuneration. How this would work out we might consider at greater length if we did not know by experience that even the fairest employer is averse to grading the wages of his men, not on a basis of their skill and faithfulness, but on a basis of the facilities for work which the employer himself furnishes. Cases of unequal rewards for the performance of equal tasks are of course to be found; but for these cases the explanation, as we shall see later, is of a wholly different nature.

Just as uniform wages will be paid for like tasks by any one employer, so uniform wages will be paid by all the employers in the community. No employer can keep in business unless he pays as good wages as any other. If any one raises wages slightly, he will attract to himself an increasing number of workmen; and he will soon get all he cares to have. In an earlier chapter we saw that there cannot be different prices for the same commodity in the same market. This law holds good for labor as for anything else one buys or sells.

Of ten fields the best one, when cultivated by one workman, may yield a product worth \$500; the worst one may yield only \$150. What will be the maximum wage that the

employer will pay? Not more than \$150. For he will not pay any workman more than the entire product created by the aid of that workman; and he will not, of his own volition, pay one workman more than another. Nor can any workman compel the employer to pay him more than the one on the worst field receives. Suppose that the one employed on the best field insisted on a wage of \$200. The employer would dismiss him, and place on that field the laborer formerly employed on the worst field. And so with any one of the ten laborers. What the employer would lose, if any one of them should "strike," would be simply the product of the worst field—\$150, according to our premises.

If we assume that the ten fields are owned by different men, we arrive at an identical result. The employer who owns the poorest field cannot possibly pay more than \$150 to the workman who tills it. If a workman on a better field demands more, his employer will dismiss him, and put in his place the workman formerly employed on the poorest field, whom he can easily induce to change employers by offering him a trifle more than the owner of the poorest field is able to pay. The dismissed workman must live; probably he will have to seek employment on the abandoned field, and content himself with the wages that the owner of that field can pay.

If we assume, instead of ten fields of varying fertility, one large, fertile field, giving employment to ten men, we see exactly the same principle at work. One of the men, cultivating the land extensively, may produce \$500; a second may add to this product \$450; a tenth may add to the total product of the nine previously employed only \$150. The employer will not pay the first \$500, the second \$450, and so on down to \$150. He will pay each one not more than \$150. If any one should demand more, he would be dismissed, and his functions performed equally well by the man who otherwise would have added only \$150. What the employer loses, when he loses any man of the ten, is the product created by the least important one of them all.

We have, then, an upper limit of wages above which an employer cannot be compelled to go: the addition to the total output created by the man who works at the greatest disadvantage. Is there, similarly, a lower limit? In the situation we have assumed—a number of competing employers, each able to increase his employment of men through breaking up new, though less fertile lands, or through more intensive tillage of lands already under cultivation—it is unlikely that any employer will make a large net return on the last man he employs. Let us assume that the uniform yearly rate of wages is \$120, while the product of the least important man varies from \$120 on the least fertile farms to \$175 on the most fertile ones. The man who has a fertile farm can increase his net income by offering a little more than \$120 for an additional workman. Such a workman will not add \$175 to the total output—the law of diminishing returns forbids this—but he may add \$170. As the employer on the least fertile field secured a product of only \$120 from his last man, he is compelled to let a man go. Perhaps the man who now becomes his least important hand is worth \$125 to him, and \$125 may be what the man on the next better field is worth. It still pays the farmer with the best fields to seek additional hands. The wage he must now offer is more than \$125—let us say, \$130. And the additional men will be worth less to him—perhaps \$165 each. Competition will still go on between the employers having the better fields and those having fields that are not so good, each rise in wages affecting, of course, the wages of all the workmen in the community. At last a point is reached where no employer can take a workman away from his competitor without offering a wage so high as to outweigh the advantages to be derived from an additional employee. Here, then, wages will tend to remain stationary. Each employer will be paying his least important man so much that any increase in wages would make that man an unprofitable member of his working force. No employer

would care to take on an additional man at the existing rate of wages. This means that on every farm the least important workman adds to the total product only enough to cover his wages. The addition to product made by the man working under the least favorable circumstances is, then, not only the maximum that the employer can be compelled to pay; it is also the minimum which he cannot avoid paying. If we describe as the "product of labor" that amount of valuable products which is brought into being by the presence of any particular laborer, we may say that, under competition, wages are determined by the product of the laborer working under the least advantageous circumstances (in this case, on the poorest land). This laborer is known in economics as the marginal laborer, as he is on the "margin" or fringe of employment, as it were—in a position where his continued employment is almost a matter of indifference to the employer, since his presence means neither profit nor loss. In the customary economic formula, wages, under competitive conditions, are determined by the marginal productivity of labor (*i. e.*, the productivity of the marginal workman).

Now let us assume that the number of workmen in the community is increased by the immigration of equally efficient workmen from another part of the country. The new men must have employment; and there is of course plenty of work in the community for them to do—on one condition, however. They must accept employment on fields yet poorer than any now cultivated, or they must be added to the force at work upon the better land, occupying themselves with tasks that formerly were neglected. In either case they will add less to the product than was created by the "marginal" workman before the arrival of the new hands. They must accept a rate of pay lower than that which formerly prevailed; else no employer could afford to hire them. And as there will not be two rates of wages for equally efficient men, the general rate for all the workmen originally employed in the community must be reduced. If the immigration con-

tinues steadily, other things remaining the same, the marginal product of labor, and with it the rate of wages, must steadily sink.

If on the other hand some of the original landless population had moved away, some of the worst fields would have been abandoned, and it would have become impossible to cultivate the better fields as intensively as before. On each field the importance of the marginal man would have increased. If any employer persisted in paying the old rate of wages, his competitors, by offering a little more, would have enticed his men away. The tendency for wages to rise, with decline in the laboring population, would be as irresistible as the tendency for wages to fall with an increase in population.

It may be worth while at this point for us to consider a position frequently taken by writers on the labor problem. They assert that full and free competition must end in the abject misery of the working population. One laborer, they say, will offer to work at a trifle less than the prevailing rate; soon another is compelled to limit his demands; and eventually the whole body is forced, by the action of one cut-throat laborer, to accept lower wages. These writers forget that competition of employers also exists, and that one can argue with equal cogency that any employer, by offering higher wages, can compel all employers to raise wages. In general we may say that competition, if full and free, neither lowers nor raises wages; it simply equalizes them.

Now let us suppose that in this community are found extensive tracts of marshy land, of practically no economic importance at all. A competent engineer enters the community, and at a comparatively low expense drains these lands and transforms them into the very best quality of tillable soil. The owners of the drained lands must have labor, and can bid a higher price than prevails generally. If the laboring population remains stationary, the effect of the new demand for labor is to withdraw men from the least favor-

able situations and place them upon the new land. On every farm, the product of the marginal workman will be increased; and wages will rise accordingly. If immigration of laborers is going on, the new demand for labor does something to counteract the effect upon wages of the new supply; if emigration is taking place, the rise in wages that would otherwise occur is emphasized.

A similar influence may be exerted by a general improvement in agricultural practice. It is said that by the use of seed corn which has been grown in an isolated field from which all barren stalks have been removed before maturity, the average yield of corn may be increased from ten to thirty per cent. This increased yield is obtained without additional labor, excepting a small amount entailed by the care of the seed corn field. The use of such seed corn in the community we are studying would increase the product of every laborer, that of the marginal ones as well as of the rest; and the competition of employers with one another would force them to raise wages in the measure of the increased marginal productivity. The introduction of a new forage plant, like Kaffir corn or alfalfa, might have a similar effect in increasing the productivity of the marginal laborers. So also might the use of a new kind of fertilizer, or the invention of a new agricultural implement. Almost all agricultural improvements, in fact, are likely to have the effect of increasing the productivity of labor and the rate of wages.

It is not in the least necessary that such improvements find general application. An improvement increasing the productivity of labor on one-tenth of the farms will generally lead to an increased demand for labor on those farms. The demand is met by the withdrawal of labor from the farms not affected by the improvement; and this will result in raising the productivity of the least favorably situated laborers on those farms, and so will raise general wages.

Up to the present we have had no occasion to consider the effect of changes in price upon the rate of wages. In our

agricultural community, the prices of produce are, we may fairly assume, equal to the prices prevailing in the nearest large city, less cost of transportation to that city. If through some improvement in railway management or some change in railway policy, the cost of transportation is reduced, the local price of produce will be correspondingly increased. Before this change, we have assumed, the product of the marginal workman was worth just enough to cover his wages. After the change, his product is worth more than this. His wages must rise, for otherwise an active competition will spring up among the employers. By a similar process of reasoning, it would be easy to show that a rise in costs of transportation, with a consequent fall in local prices, would necessarily reduce the value product of the marginal laborer, and with it the rate of wages.

One other influence needs to be noted here: namely, a fall in the rate of interest. There are few farms that could not be made to yield a much larger product, if abundance of auxiliary capital were to be had at a low rate of interest. If a farmer must pay ten per cent. on borrowed money, he cannot build a good barn or drain a marsh until he has accumulated a considerable amount of money of his own. In the meantime opportunities for labor which would be thrown open if capital were to be had at five per cent. lie untouched, and the existing labor supply is spread over barren fields, with consequent low productivity. Every reduction in the interest rate creates a new demand for labor, and withdraws part of the existing supply from the poorer fields, thus increasing marginal productivity and wages.

We may now sum up the results of our study of wages under the assumed conditions. Wages are determined by marginal productivity of labor, but marginal productivity itself is subject to many and varied influences, such as arise from increase or decrease in number of laborers; increase or decrease in the amount of available land; the progress of improvements; the fluctuations in the interest rate. Let

us now see how far we can apply the same reasoning to the determination of wages under conditions nearer like those of modern industry, confining ourselves, however, to those parts of the industrial field in which competition exists among employers on the one hand and among workmen on the other.

The first fact that we must take into consideration is that we cannot assume that in this wide field of industry every workman can enter upon direct competition with every other workman, and thus bring about an immediate equalization of wages. The journeyman tailor cannot be replaced by the excavator nor by the farm hand; the cotton mill operative cannot take the place of the iron and steel worker. At any given time, then, there may be many rates of wages, not one universal rate. How the rate of wages for any particular class of laborers is determined we have now to consider. In the next chapter we shall see how the rate paid in one industry may indirectly affect the rates paid in other industries.

Let us take, as our typical industry, cotton spinning—an industry which still remains highly competitive. We may safely say that one rate will prevail in any one district, as the New England or the Lancashire centers. The movement of workers from mill to mill is easy, and higher wages in one mill would quickly attract workers away from other mills.

Now, we cannot assume, as we did in our agricultural example, that the different manufacturers can ascertain how much their laborers are worth to them by simply dismissing a few, and estimating the loss of product resulting. If a mill works without a full complement of hands, a part of the plant will be idle; and a part of the loss will be due to this fact. When a manufacturer is erecting a mill, however, he can and must forecast the productivity, measured in value, of labor. With a mill employing one hundred men, he can figure upon a certain output. Probably he has business connections which make it easy for him to secure a market for

that output. The price at which he will sell is of course uncertain, but admits of approximation. He knows what he must pay for capital, or if he proposes to use his own capital, how much he could obtain in the way of interest if he loaned it to some one else. He knows what he will have to pay for a manager, or if he intends to manage the mill himself, what salary he could otherwise command in a mill belonging to some one else. After calculating all such elements in cost, and subtracting their sum from the estimated value of the product, he has a remainder which is a fair estimate of the worth of the labor of a hundred men. Similarly, he can calculate what a second or third or tenth hundred men would be worth to him, if he should decide to erect a larger mill. Possibly the second hundred men would be worth more to him than the first, and the third more than the second, owing to the economies of concentration which we considered in the last chapter. As the projected plant increases in size, a point is eventually reached where the manufacturer has to figure upon increasing difficulty in obtaining capital, in managing so large a concern, in marketing his product. Additional laborers will be worth less to him, accordingly.

The first hundred workers employed may be worth to the employer an average of \$300 annually; the second may so increase the product as to be worth an average of \$350 annually; the third, \$400, and so on up to the sixth, who may be worth \$600. A seventh hundred may be worth only an average of \$550, and so on until a twelfth is again worth only \$300 annually. What size of mill will our enterpriser decide to erect, and what rate of wages will he pay? Let us assume that every year ten new mills are erected for every hundred already in operation. Of course the enterpriser who erects a new mill knows that the owners of the mills already established will make considerable sacrifices in the way of increased wages rather than see their complement of employees enticed away. He must therefore count either upon an

existing surplus of labor, trained to the business, or upon new laborers who may be brought into the industry from other fields. Assume that the aggregate supply of unemployed cotton spinners and of untrained workers who can readily be drawn into the trade is equivalent to 10,000 trained laborers for every hundred mills in the trade. The projectors of the ten new mills can then calculate on 1,000 workers each. Each can pay his tenth hundred an average of \$400 annually. If one employer attempted to place the figure at \$350, he would find that his competitors would enlarge their plants, and deprive him of this unit of labor; if the men demanded \$450, he would limit his employment to 900 men, and the superfluous hundred would have to seek employment at disadvantageous terms from his competitors. Thus we see that the prospective marginal productivity of labor will play a chief rôle in determining what wages shall be throughout the industry.

It is not necessary to go through our earlier reasoning to show that an increase in the number of cotton operatives will reduce the prospective marginal productivity of each one, and with it general wages in the industry; or that the progress of improvements, changes in costs of transportation and in interest rates must affect the marginal productivity of labor. Nor is it necessary to seek for illustrations in other fields of competitive industry. Everywhere we should find the same principles at work; uniformity of rewards for uniform services; a tendency for wages to be set at the marginal product of labor. Everywhere we should find that productivity tends to diminish and wages to fall when the number of laborers increases, other things remaining the same; everywhere a tendency for productivity to rise with increase in artificial capital or in available natural resources.

But it is far from the truth to say that competition prevails over the whole field of industry. There are problems connected with the wages paid by monopolistic concerns; with wages paid to persons who have no power to bargain on

even terms with their employers. We encounter, moreover, a number of competing explanations of differences in wages. In one industry wages are high; if we inquire the reason, we are told that it is to be found in the risks to life and limb peculiar to the trade. In another industry we find high wages; we are told that the cause of this is the strength of the trade union. If we desire an explanation of the fact that wages are high in the United States and low in China, we are often told that the reason is that the Chinaman will live on rats and rice, while our workman must have three honest meals a day. How do these explanations square with the marginal productivity theory of wages sketched in the preceding pages? This we shall consider in the next chapter.

CHAPTER X

INFLUENCES GIVING RISE TO DIFFERENCES IN WAGES

In the last chapter we arrived at the conclusion that in so far as full and free competition exists, both on the side of the employers and on that of the employees, wages tend to a uniformity, and are determined by the marginal productivity of labor. In practice, however, we seldom find competition thus operating without check. In some cases a workman has to rely for employment upon a single employer, or a body of employers combined in a single organization; in other cases, an employer has to obtain his labor supply from the membership of a trade union, which exists chiefly for the sake of restraining competition among the workmen. In yet other cases combinations of employers confront combinations of workmen, and the wages determined upon are the result of a "collective bargain," which appears to express rather the relative strength of the two parties than the productivity of labor.

Even where two-sided competition exists within an industry, so that the productivity test obtains, we often find that there are barriers which prevent any large number of employers or of employees from entering the industry. In early modern times there existed great trading companies which enjoyed the exclusive right of trading in certain regions—the East Indies, the Levant, the Hudson Bay territory. Any member of the company might fit out an expedition, and trade on his own account; all the profits he obtained were his, not the company's. Thus there was competition within the company, and the earnings of a member were in this sense competitive earnings. But persons who were not members of the company were not allowed to trade at all. Competition of outsiders was impossible; and thus

in some measure the earnings of all the members in the company were non-competitive—monopolistic. In a similar way, in many trades competition among workmen is fairly active; but barriers of diverse nature exist to check outsiders from entering the trade. Hence the earnings of those who are in the trade are in one sense competitive, in another sense non-competitive, or monopolistic. Our present concern is to give due weight to these various considerations, and to determine how far they merely qualify the theory laid down in the last chapter, how far they impair its validity.

We may begin with an examination of cases in which there are manifest inequalities of reward for equal services.

A large part of the ready-made clothing in the United States is produced under the "sweating system." Under one form of this system, the "manufacturer" buys the materials, but instead of having them worked up on his own premises, turns them over to a contractor, who agrees, for a stipulated price, to get the work done. The contractor then distributes the work among the needy persons of his acquaintance—those who are prevented by age, ignorance or other disabilities from seeking employment outside of the tenements in which they live. The lower the wage at which these people can be induced to work, the higher the profits of the contractor. He learns by experience to estimate the depth of their poverty and the intensity of their need, and makes his bargains accordingly. Among his clients are perhaps some who depend upon him alone for employment—Russian Jewish widows, fugitives from the cruelties and oppression of their native land. These will work blindly, uncomplainingly, for the most meager wage. What they will receive will be barely enough to keep them alive, and the contractor will make considerable profits out of their labor. Others of his clients are less helpless; they may not have children dependent upon them; they may have a smattering of the English language, and so may learn of other opportunities for employment; they may fall within the "sphere

of influence" of another sweating contractor, who will also desire to secure their services. All these circumstances the contractor will take into account, and will grade his wages accordingly. Under the conditions, then, wages are paid, not according to productivity, but according to need, in the sense that those who are in the direst need are the most wretchedly paid.

The above is perhaps an extreme case ; but one does not need to have a very wide acquaintance with practical affairs to know of instances which illustrate the same principle. It is only where the workman is ready and able to change employers whenever he feels that he is unjustly treated, or where he is a member of an organization which insists upon equal rewards for equal services, that an employer can be forced to pay wages which correspond with the marginal productivity of labor. Fortunately, the field in which such conscienceless discriminations are made is a comparatively narrow one, and grows still narrower with every improvement in the material conditions and every advance in the general enlightenment of the working classes.

Somewhat analogous is the case of unequal wages, paid in different localities, for substantially equal services. Instances of such inequalities have been given in Chapter V. We saw there how an enterpriser might gain important advantages by establishing a new branch of manufacture in a locality where a supply of unemployed labor exists. Under the circumstances, it cannot be said that wages at the outset correspond with the productivity of labor. The enterpriser may be able fully to man his works while offering a wage so low that he makes a substantial profit even on the last workman employed. This advantage, as we saw, cannot long continue. Other enterprisers will enter the field ; competition among them will raise wages, until a point is reached where no one can gain a profit by extending his operations and employing more men. This means that in the end each will be paying for marginal labor all that it is worth to him.

Wages, as we saw, may still be unequal in the different localities. The abundance of natural resources—cheap coal, water power, etc.—or proximity to markets or to supplies of raw material, may give one locality a distinct advantage in production over another, and this advantage will be reflected in higher productivity of labor and higher wages. We need look no farther for the reason why the American iron and steel industries, enjoying unsurpassable deposits of ore and coal, are able to pay higher wages than their Belgian competitors, handicapped as are the latter by lean ores and costly coal.

We may next consider the case of an industry controlled by a monopoly. Here equal wages may be paid; but there is no reason for assuming that they will correspond with the marginal productivity of labor in the industry. Indeed, this is something we may be quite sure they will not do. Imagine that a monopoly controlled the entire iron and steel manufacture of the United States. It might secure the services of 50,000 men comparatively cheaply, as there are at least 50,000 men who are so specialized by long service in the industry that they would shrink from the prospect of seeking other employment. A second 50,000 men would probably include many who would find little difficulty in entering other industries. To obtain the services of these, higher wages must be paid; and this would exert a decided influence in raising wages for those who are, as it were, committed to the iron and steel industry for good or ill. This would be still more true of a third 50,000; and to obtain the services of a fourth set of 50,000 men the monopoly would have to advance wages considerably. Now the mere fact that the fourth set of 50,000 men may create an increase in the product which exceeds the wages demanded by them, is not a sufficient reason why the monopolist should employ them. The monopolist must set against the profit represented by the increased output, the loss occasioned by the increase in wages which will be demanded by the men already in his

employ. We may, therefore, say that a monopolist will cease extending his operations at a point where the product of the last laborers employed considerably exceeds the wages which must be paid them.

Although there are no monopolies so absolute as our imaginary iron and steel monopoly, the country is full of enterprises that have a limited monopoly power. In all of these the wages paid will fall somewhat short of marginal productivity in the industry. Wages may, of course, still be higher than in competitive industries; indeed, it is a common thing for a monopoly to strive to win a reputation as a benevolent employer of labor. The monopoly, we may say, limits the amount of labor that may be employed in the field it controls, and thereby insures a high marginal productivity of labor. Part of the excess of productivity it turns over to the laborer in the shape of higher wages, in partial expiation of its manifold sins against the public. The remainder of the excess it retains, and adds to its profits.

We may now enter upon a study of the forces which are responsible for the differences in wages in the various trades and occupations. And here we encounter at the outset a difficulty which has not hitherto arisen to vex us. How can we say what differences in general rates really exist? In all our discussion up to this point, we have spoken of equal rewards for equal services. Of course if one bricklayer does twice as much work as another, he ought to receive twice the wages. The essential equality of wages requires this. But if a tailor receives twice the wages of a bricklayer, how can we say that it is because he does twice as much work? Clearly, it is not possible to reduce tailor's labor to terms of bricklayer's labor, so as to show whether one is rewarded more liberally than the other.

Let us suppose that there are half a dozen occupations in a community, all of which require of beginners about the same degree of intelligence, dexterity, and strength, although they differ as widely in their nature as bricklayer's

and tailor's labor, so that no direct comparison of wages is possible. Is there any reason why differences in wages per day should exist? At first, we should expect, the choice of occupations would be more or less a matter of chance. A boy would enter one of the trades because his father exercised it; another, because his best friend intended to enter it, and so on.

Once in the trade, a man would have to remain there, unless he wished once more to go through the tedious tasks of a beginner. The different trades would thus be walled off, as it were, one from the other. Mature reflection might convince a man that he had made a mistake in choosing his trade; but this would not mend matters. His earnings would be wholly subject to the laws of his trade. If many men happened to be in the trade, and the demand for their services were limited, some of them would have to be set at unimportant tasks, which could not be well remunerated. And competition among the men would force wages down to the level of remuneration of these. If the trade were but scantily supplied with men, even the least important of them all might be employed at work that could pay a high reward, and so a high rate of wages would prevail. In each trade the rule that marginal productivity determines wages would apply; but marginal productivity would be unequal, for men of equal native ability, in the different trades.

In every trade, however, a constant supply of new recruits is necessary to keep its ranks full. And the prospective apprentice has at any rate some freedom of choice. In one trade, he finds men discontented and impoverished; in another trade, he finds every appearance of prosperity. Unless he is very blind, he will choose a trade in which the latter condition prevails. So the tide of apprentices sets steadily away from the underpaid trades, and in the direction of the better paid ones. Failing numbers, in the former trades, raise the marginal productivity of labor; increasing numbers, in the more prosperous trades, reduce wages there. Whether

this process will continue until perfect equality of rewards is established for men of equal native ability in different trades, we cannot say. The equalization depends upon the good judgment of the prospective apprentices in their choice of trades; and these, like all men, are likely to err. But gross inequality, under the circumstances, could hardly long persist.

Some of the differences in wages actually existing appear to be fortuitous, as those assumed in the foregoing example. But some of these differences are clearly connected with the personal qualifications of the workman—his strength and skill, his intelligence and reliability. Others are connected with the different degrees of risk, agreeableness, and dignity of the employment itself. Still others depend upon trade union requirements, or legal restrictions. What we are concerned with here, however, is not to classify the causes of differences in the wages paid in different occupations, but to see exactly how these causes operate.

We know, for example, that a dangerous occupation is likely to carry with it a higher remuneration than a safe one; that an occupation requiring a long apprenticeship is ordinarily better paid than one requiring practically no training at all. Why may we not say, then, that a part of a man's reward is for labor, part of it for risk? If a tedious apprenticeship is necessary, may we not say that part of the reward of the journeyman is a compensation for the time and trouble spent in learning the trade? Such an explanation would be quite satisfactory if we actually found that, other things equal, wages were nicely graded according to risk, or to length of the period of apprenticeship—if, for example, we found that a workman in an occupation involving no appreciable risk received a wage represented by x ; an equally efficient workman in an occupation involving a considerable risk received $x + y$, and a third workman, in an occupation twice as dangerous as the second, received $x + 2y$, and so on. But we do not find in real life any such simple rule as this. Danger-

ous occupations, we often find, are very ill paid in comparison with occupations requiring no greater natural ability and entailing no risk worth speaking of. Almost the least remunerative occupation that an able-bodied citizen of the United States can engage in is that of soldier, and this in spite of the fact that the Federal Government prides itself upon being a liberal employer. Certainly the risks of the occupation are considerable. A man who accepts employment as trainman on the American railways stands one chance out of one hundred and twenty of meeting a violent death within a year, and one chance out of nine of being injured. His average daily compensation will vary from \$2.09, if he is a fireman, to \$4.25, if he is an engineer. In either case, he is a man of more than average physical strength and general intelligence. If he is an engineer, he is also a man who has at least as much training as the average skilled laborer. What we really find is that in some cases no allowance appears to be made for risk; in more cases some allowance appears to be made for it, but that there is no apparent tendency for this allowance to vary regularly with the degree of risk. Similarly with different degrees of skill. Ordinarily, the skilled laborer, who has undergone a long apprenticeship, receives a higher reward than the unskilled laborer of equal native intelligence. In some cases, however, this does not appear to hold true; and it is idle to attempt to show that there is any ascertainable proportion between degrees of skill and differences of remuneration. So also with disagreeableness of work. Little, if any, allowance is ordinarily made for it in wages, although in some cases it seems to play a very important part. Clearly, then, it is not enough to say that wages are affected by risk, by skill required, by disagreeableness of occupation. We must know how these causes operate, and why they operate with such irregularity.

Let us see if a concrete example will not make clear the relation risk actually bears to wages. Imagine that a gunpowder factory is erected at a distance of a few miles from

a city of some size. And let us suppose that five hundred workmen will be required, and that they will be of a grade of skill that would command an average of \$3 a day in perfectly safe occupations. How much will it be necessary to add to this sum, to induce them to enter the powder works?

Now, the first question that is likely to arise is: How much danger is there that the works will blow up? You do not know this; neither do I; nor, we may venture to say, do the workmen whom it is sought to employ. Perhaps there is no danger at all in the present stage of the powder manufacture. Powder mills have often blown up, however, and most of us would prefer to stay out of them.

In every community, there are some men who do not seem to be in the least afraid of danger. They may know that destruction has befallen others; but, each argues, everybody can't be killed; why should I be? Such men have supreme confidence in their luck. Danger, real or imputed, does not influence their conduct. Now, if there are a thousand men of this kind in the city, it will be quite possible to man the powder mill without offering any more of an advance in wages than would have to be offered by an enterpriser who proposed to establish a new shoe factory or nail mill. The powder manufacturer, as any one else starting a new enterprise, will offer wages a little higher than those prevailing in the city—ten cents more per day, perhaps. Not every one will jump at the chance to improve his wages; but the men who despise danger will one by one leave their former employments and enter the doors of the powder mill. Presently wages will be reduced to the general level. No man will for this reason leave the mill, nor need the enterpriser care if a few should do so, for there are still plenty of men in the city who are not disturbed by fear of accident.

But suppose that instead of one thousand such men, there are only one hundred. The powder manufacturer will find that ten cents extra a day fails to bring the full complement of men. Perhaps he will offer twenty-five cents ex-

tra; and this may bring another hundred men, who fear for their lives, indeed, but desire the additional income extremely. An additional twenty-five cents may bring another hundred, more timid or less eager for high wages. At the rate of \$1 a day above the prevailing rate, the enterpriser may be able fully to man his works.

Now, we may ask ourselves, is this extra dollar a compensation for risk? Remember, there may be no real risk at all; and it may be that it is nothing but the name of powder that has kept the workmen back and forced up wages. And how is it that a powder manufacturer is able to pay men for risk, at their own estimate—very likely a mistaken one, too? Well, the powder manufacturer is experiencing the ordinary incidents of his business. Everywhere powder manufacturers have to contend with the same indisposition on the part of the ordinary workman to enter their mills. Everywhere the amount of available labor is limited, relatively to the demand for it. And so the productivity of a laborer, measured in value of powder produced, is high, and wages may be high accordingly. If, however, the number of men who do not mind the danger were sufficient fully to man all the powder works, more powder would be produced; its value would be less, and the productivity of labor, in value, would fall until it corresponded with that of labor in other occupations requiring equal skill.

If the risks to life and limb undergone by locomotive firemen and engineers were reduced by fifty per cent., through the introduction of better safety appliances, the improvement of track, etc., how much could wages be reduced? I have never heard of a railway president who proposed to spend the company's money in reducing the chances of accident, with the expectation that part of the cost might be met by a reduction in wages. Nor do we find that wages are particularly high in the sections of the country where transportation is conducted at the greatest cost in life and limb. Here, it appears, is a case in which a great industry

is able to rely upon the existing supply of men who bear risks cheerfully, without any extra compensation. The marginal laborer, in transportation, is no more productive than the marginal laborer in general industry; therefore he is no better paid.

The case is similar with disagreeable labor. Certainly men ought to have extra compensation for engaging in work that is dirty and malodorous. But if the amount of such work in a community is small, a very slight advance in wages is usually enough to draw a sufficient supply of laborers from other occupations. If the amount is large, part of the working force must be recruited from among the more fastidious. Higher wages must be paid. Here again we may ask: How can the enterpriser afford to pay higher wages for this kind of work? And the answer is the same. As labor is relatively scarce, its productivity is relatively high.

The principles which explain the higher rewards that are usually received by skilled laborers are not essentially different. Where a long apprenticeship is necessary, only those young men who have sufficient perseverance to work through several years without pay, and who are sufficiently free from family obligations to be able to do so, can enter the trade. Here is a barrier which, unlike that of risk, can be surmounted by none without some difficulty. There will not, ordinarily, be any one who will set patiently about acquiring skill, without a reasonable expectation that he will earn higher wages than he would have been able to earn as an unskilled laborer. Men in the skilled trades are hence relatively scarce; their productivity is relatively high.

If, however, a position requiring skill is one of superior dignity, or if the work to be performed is of a peculiarly agreeable nature, the number of men who will undertake the burden of a long period of preparation may be so great that the productivity of each and his reward will be insignificant.

If entrance to a trade is controlled by the men who are already exercising the trade, we may be quite sure that in one way or another the barriers to be surmounted by the aspirant to a place in the trade will be made more formidable. If, for example, the existing body of carpenters were given the right to admit to the exercise of the trade only those whom they chose to admit, the number of apprentices would be narrowly limited indeed. Carpenters' labor would become relatively scarce; its productivity would be increased, and wages would rise accordingly. We do not to-day have trades that actually control apprenticeship in this absolute way. But we do find, in many parts of the country, that trade unions insist upon a limitation by the employer of the number of apprentices, and that they are able to enforce their demands in this respect. We also find, in many cases, that they hedge the employment of apprentices about with so many restrictions that an employer can hardly afford to have apprentices in his works. In some cases heavy fees are exacted from men who wish to become members of a trade union; and persons who are not members of the union are not permitted to work at all. Most trade unions are bitterly hostile to the establishment of trade schools by the state. This monopolizing tendency is not by any means confined to the trade union. It is reported that in Germany the medical profession is clamoring for a restriction upon the number of students to be admitted to the medical courses. There are, it is said, so many physicians and surgeons in Germany that it is difficult for most of the members of the profession to make a living.

Apart from positive limitations of the nature described, such high qualifications may be prescribed by those already in a trade or profession that the number of new members will be narrowly restricted. In the middle ages, before a man was permitted in certain crafts to attain to the position of an independent master workman, he was required to prove his finished skill by the execution of a typical piece of work

—his “masterpiece.” The purpose of the masterpiece, originally, was to insure a high grade of workmanship; and its character was naturally prescribed by the masters already in the trade. But when those in the trade felt that there were masters enough, they sometimes prescribed a masterpiece so difficult, or requiring such expensive materials, that an ordinary journeyman was effectively excluded from the mastership. To-day, although we have no masterpiece requirements, we do, in some cases, require the passing of an examination before a man is permitted to enter upon the exercise of a trade. This also is designed to secure good workmanship. But it is easy to see how entrance examinations may be so distorted from their original purpose as to establish a restriction upon entrance to a trade. Such restrictions have the effect of raising productivity within the trade. At the same time, they, of course, make it necessary for the rejected candidate to seek some other employment, which, very probably, is still more overcrowded. They increase productivity in one trade at the expense of a reduction of productivity in another. Whether from a public point of view this is justifiable or not does not concern us here. What we need to hold clearly in mind is the way in which such restrictions work.

Now let us suppose that a trade union, instead of limiting directly the number who practice the trade, fixes a standard wage, and prevents any man in the trade from working for less. Can we say that this is a matter concerning merely the workman and his employer; that if the workman receives a higher wage, the employer receives lower profits? By no means. If the union controls the entire trade throughout the country, fixing a uniform wage, the employer is, as a rule, injured very little, if at all. The effect of the establishment of a fixed wage is to put a stop to all work in the trade where the productivity of labor is not equal to the wage set. Perhaps this will leave unemployed some of the men capable of practicing the trade. These will have to seek

other occupations, reducing productivity there. The rule that wages tend to be equal to the marginal productivity still holds; although in this case it is marginal productivity that adjusts itself to wages rather than wages to marginal productivity.

Finally, we may consider the effect of the so-called "standard of living" upon productivity and wages. There are some who believe that wages are adjusted to the average needs of the workman; and if these needs increase, wages must rise. What a man feels that he ought to have, in the way of the material necessities and comforts of existence, is his standard of living. This, according to certain optimistic social philosophers, he will get. Accordingly, if you are modest in your demands, you will receive a modest stipend; if you are convinced that the world owes you not only a living, but a good living, the world will kindly accommodate itself to your view of the matter. Certainly, this theory is a far more agreeable one, and far easier to grasp, than the laborious one presented in this and the foregoing chapters. How much truth is there in it?

If you are planning to become a physician, you are likely to seek the advice of some who are now practicing the profession. You will probably receive some such advice as this: "Whatever you do, don't make a physician of yourself. A physician must dress well; he must live in a good house; he must keep a carriage; in short, he must live at great expense. And in the majority of cases, he will find great difficulty in obtaining an adequate income." Now, what this means is that physicians have a comparatively high standard of living, and that their average incomes are scarcely sufficient to meet all the demands upon them. You may not be deterred by the doleful account of the physician's financial difficulties. But is it not probable that, in the length and breadth of the land, hosts of young men are in this way turned to other professions? If, on the other hand, the majority of physicians were recommending their profession as

one in which a good living is assured, is it not likely that many young men would be attracted to the profession? In the former case, the average income of the physician is likely to be increased by the growing scarcity of competent medical men; in the latter case it would be likely to be decreased, by increase in numbers.

If, then, the earnings in a profession or trade are not sufficient to command, on an average, the necessities and comforts that are deemed essential to happiness, some influence is exerted upon those entering the profession or trade. The standard of living thus exerts some slight influence, at least, upon wages.

In the example just given, the effectiveness of the standard of living in one profession depended upon the absence of a similar standard in other professions. Suppose that after getting the opinion of a physician as to the advisability of entering his profession, you apply to a lawyer for his opinion on law as a profession. "Whatever you do, avoid the law," he will probably tell you. Next, you go to one who has chosen journalism. "I pity a young man who selects journalism as his profession," is probably what you hear. Then you go to a teacher. He shakes his head. "If I were a young man, I should choose some other profession." Indeed, if you do not happen upon one of the few optimists who still survive, you are likely to conclude that you may as well choose the profession toward which you were originally inclined, since all the professions seem to be inadequately paid. The fact is that most of us think that we need more than we get; and the result is that no one profession is able to frighten aspiring youths into choosing some other line of activity. The standard of living of any profession, therefore, has little effect upon its average earnings.

Suppose, however, that a whole nation, practically, is affected by this feeling of discrepancy between income and need. A considerable proportion of its young men will marry late or not at all; children will be few, and, if immi-

gration is not active, the population will gradually decline. In every occupation, men will be withdrawn from the less important tasks; the less fertile fields and the less productive mines will be abandoned. The marginal productivity of labor, and the average rate of wages, will increase. On the other hand, if a nation consists of people who will thankfully receive little if they cannot get much, who will forego one luxury or comfort after another rather than change their traditional mode of life, no check upon population will exist, until the bare necessities of existence are insufficient for all. Here, as elsewhere, it is because the productivity of labor is low that wages will be low. Such people will obtain only a bare minimum of existence, because that is all the marginal laborer is worth, not because that is all he needs.

We may now sum up the principles which we have sought in the foregoing long array of apparently unrelated examples. The marginal productivity of labor is in most cases the immediate determinant of wages. Risk or disagreeableness of labor, the skill required, the barriers to be surmounted, the standard of life, may all affect the rate of wages, but only in so far as they affect the marginal productivity of labor, through determining its supply.

CHAPTER XI

CAPITAL

Perhaps the most confusing term with which the student of economics has to deal is "capital." Almost every writer on political economy has an independent view of what the term capital really includes. One writer, for example, assures the student that land can never be capital, while another asserts that it is always capital. One authority declares that a dwelling house is not capital, while another is certain that such a house is as much a part of capital as is any other form of wealth. When scientific writers disagree as to the meaning of a word, the best plan is often to return to the speech of the plain man, and find what the word means on his lips. Let us ask the plain man what he means by "capital."

Suppose that we number among our acquaintances a clothing merchant. We ask him what he means by his capital. "My capital," he will probably say, "is the money I have in the clothing business." If we question him further, he will admit that by "money" he means not actual coins or bills, but money's worth, in one form or another. Still further questioning will probably lead our merchant to give something like an inventory of his stock, a valuation of his building, an estimate of the "good will" attaching to the business (*i. e.*, the value of the steady patronage which the concern has won for itself through upright dealings in the past).

It is certain that the merchant will place in his inventory each one of the suits of clothes which he has for sale. But we cannot safely infer from this fact that a suit of clothes, as such, is capital. For if the merchant decides to take away one of them for his own wear, he no longer counts it as capital at all. The same thing is true of the suits of clothes

that pass into the hands of his customers. Though the merchant may assure each customer that a particular suit is a "fine investment," he knows in his heart that he is speaking in metaphor; and this the customer knows as well.

Thus it appears that whether a thing is capital or not must depend, not on the nature of the thing, but on the purpose for which it exists among a man's possessions. If for sale or for use in connection with one's business, it is capital; if for the personal use of the owner, it is not capital.

But this is only the beginning of the perplexity. A year later you may ask the same merchant what his capital now is. Very likely it is still \$100,000. Now, is this the same capital, or is it a new one? The merchant certainly will say that it is the same capital—unless, of course, he has lost, in the course of the year, his original capital and has replaced it from some new source. But how can the capital be the same after the lapse of a year? Nearly all the things that figured in the first inventory, except the building and the good will, have been replaced, in the second inventory, by objects which may be of a quite different character. In the first inventory, perhaps, cheap grades of goods preponderate; in the second these may be largely replaced by higher grades. However this may be, there can be no denying that the goods have changed, yet the merchant says that the capital is the same.

Perhaps we are making ourselves unnecessary difficulties in our endeavor to arrive at the merchant's meaning when he says that his capital remains the same even after most of the things originally composing it have left his possession. Perhaps he means simply that he has as large a capital at one time as at another. Two things that are equal in magnitude are of course not the same thing, but we often speak of them as if they were.

Yet if we reflect upon it, this does not appear to be what the business man means. Suppose that fire or flood had destroyed his store and stock, and that a rich relative, to set him on his feet again, had given him \$100,000 to replace

them. The merchant would not say that he was continuing in business with the same capital, although in magnitude it would be the same. Clearly, a business man thinks of his capital as something that is capable of remaining permanently the same although the goods that compose it are constantly changing. And this conception we shall adopt, as it is, on the whole, one of the simplest of all that have been proposed, and one which gives perhaps a better approach to the problems connected with capital than would any other. We may define capital, then, as a fund of productive wealth, which has the power of self-perpetuation. To quote from Professor Clark, "we may think of capital as a sum of productive wealth, invested in material things which are perpetually shifting—which come and go continually—although the fund abides. Capital thus lives, as it were, by transmigration, taking itself out of one set of bodies and putting itself into another, again and again."*

These material objects, in which a fund of capital is invested, do not, in ordinary language, bear a characteristic name. Following Professor Clark, however, we shall call them "capital goods." A merchant's stock in trade, his building, the land upon which his building is situated, are capital goods. That part of the merchant's capital which resides in his stock may change its material embodiment a dozen times a year; that part which resides in the building may not wholly change its form in less than fifty years; that which is invested in land may remain unchanged for an indefinite period. Thus, according to the character of the capital goods, "transmigration" from one material form to another takes place with greater or less frequency.

Let us now try to see, in the concrete, what this process of "transmigration" really is; we shall then be able to arrive at a clearer view of the nature of capital. An enterpriser possessing \$100,000 in cash proposes to establish a clothing store. The first thing he must consider is the best location

**The Distribution of Wealth*, pp. 119-120.

for his business. He must find a place where, he has good reason to believe, the goods in which he proposes to deal will sell at a higher price than that which he must pay for them. This, of course, is comparatively easy to do. Goods, as they come from the factory, may in a physical sense be ready for use; economically, however, much remains to be done before they can be placed where they will fulfil their ultimate purpose—the direct satisfaction of human wants. They must be conveyed to places where they are accessible to the consumer; they must be so arranged that inspection is easy. Expert clerks must be at hand to point out their good qualities and explain away their bad ones. This means that a considerable addition to the value of goods may be made after they have left the factory; and this addition, properly speaking, is the product of the mercantile establishment as a whole.

We need not stop simply with the affirmation that this increase in value is the product of the mercantile establishment in its entirety. Part of it is the product of the clerks and of the labors of the enterpriser himself; part of it is the product of the building in which the goods are housed; of the counters and shelves; of the display windows; of the elevators and the lighting and heating apparatus. And while it would be difficult, after the establishment is under way, to appraise exactly the services of each laborer and each appliance, the enterpriser must, at the time when he founds his business, form some idea of what these services will be, in order that he may adjust his outlay accordingly.

Each item of the stock ought to sell at a price which will at least replace that item with one of equal value, together with a surplus which will cover the cost in labor employed in handling it, and which will also make some contribution to the expense of keeping up the building. Any item which does not do this is carried at a loss; and a business man who should continue to carry such items would be in danger of seeing his capital diminish, and perhaps ultimately disappear.

Some parts of the stock may afford a far larger surplus, and the aggregate income of the establishment may be much more than enough to keep stock and store intact, after paying for all human services directly employed. The nature of this excess of income above outlay we shall consider at a later point. For the present we are concerned primarily with the fact that the first demand upon the business is that each item should maintain itself—*i. e.*, through sale, reproduce itself together with auxiliary costs connected with it.

We may in a similar manner follow in imagination the process whereby capital persists through transmutation in a manufacturing establishment. An enterpriser with \$100,000 in cash decides to erect a cotton mill. The difference between the aggregate value of the product—cotton yarn—and the value of the raw cotton represents the gross value product of the mill. And this product is in part due to labor, in part due to machines and building, fuel and power plant. Each grade of yarn produced in the mill should, at the very least, replace through its selling price the raw cotton and fuel consumed, the wear and tear of machines and other appliances, and the cost of the labor employed in connection with it. The enterpriser will quickly discontinue the production of a grade of yarn which does not do this. Some of the grades—probably all—will produce a surplus above the costs which have just been enumerated.

This surplus, as well as the sums necessary for the repair of building and machinery, the replacement of raw material and fuel consumed, first appears in the selling price of the cotton yarn. This selling price is the joint product of the labor, materials, fuel and machines; and the manufacturer must be able to estimate how much each machine, each bale of cotton, each ton of coal, contributes. Every capital good must produce a value at least equal to its own before it wears out. Otherwise there results to the manufacturer a net loss from its use.

It must now be clear how it is that a fund of capital

persists. Each capital good, before it is sold or worn out, produces a sum of value that enables the owner of the good to purchase or make another good of the same character, which in its turn possesses the power of replacing itself by a successor of equal value. The capital goods of this year are therefore not merely the successors in time of those of last year, now mostly destroyed. They are, economically, the offspring of the capital goods of the earlier period, and they inherit from their predecessors the same power of replacing themselves with other goods having the power of self-replacement.

It is, of course, to be understood that this self-replacement is neither automatic nor inevitable. We may say that under certain conditions a particular capital good will add something to the total product of an industry, but not enough to keep itself in repair and replace itself when worn out. Under other conditions a capital good will just do this; under still other conditions a capital good will add to the product of an establishment not only enough for its own repair and replacement, but a surplus besides. Experience has taught enterprisers how to avoid the employment of capital goods that do not maintain themselves, and of those that do nothing more than this. Mistakes are of course sometimes made, but not so frequently as to invalidate the statement that capital goods, as a rule, reproduce themselves economically through the values which they create. Intelligent action on the part of the owner of such goods is essential to the truth of this proposition; but such action may generally be taken for granted.

But perhaps it is not yet entirely clear that the capital to-day embodied in a merchant's stock is essentially the same capital that will exist a year hence, when the concrete capital goods will all have changed. An illustration from a related field may help to remove the difficulty. A man has in his purse, let us say, a one hundred dollar bill; he exchanges it for ten gold eagles. Does he continue to have the

same hundred dollars? For all practical purposes, yes. The hundred dollar bill represented a certain purchasing power; the ten eagles represent not a new purchasing power, but identically the same one. True, the eagles may happen to be a more convenient form in which to clothe this purchasing power. So a merchant may have \$100 of his capital in the form of shoes, let us say. To-morrow he may part with the shoes for cash, with which he may purchase hats. Again the capital is turned into cash; again it is reinvested in capital goods. The hundred dollars worth of capital with which we started represented a certain amount of productive wealth. Soon it took the form of money, only to be transformed again into goods, and so on indefinitely. The hundred dollars after each act of exchange is not a new productive power added to the wealth of its owner; it is a new form assumed by the original productive power.

A threshing machine may continue in good order for ten years; at the end of that time it begins rapidly to run down, and after fifteen years of operation it may have to go to the scrap heap. In the fifteen years of the machine's life it probably yields, as we have seen, a sum at least sufficient to replace itself. This sum will begin to accumulate in the early years, existing first as a part of the product which the machine assists in creating—threshed wheat—then in the form of money, the price of the wheat. It is unlikely that the owner of the machine will keep the replacement fund in the form of idle cash; more probably he will transform it into some other form of productive wealth—cattle or hogs, perhaps. Long before the machine is worn out these have reached maturity and have been sold, and the proceeds of the sale reinvested. If we look at the process from an economic viewpoint we shall see the threshing machine gradually transforming itself into an increasing herd of live-stock. When at last the machine is abandoned, the capital formerly resident in it exists in the form, let us say, of a herd of cattle. This capital may be transformed into

cash through sale, and the money may in turn be exchanged for another threshing machine. Or, the money may be used to purchase shares in an ironworks or a weaving mill. In the latter case we have an instance of capital shifting from industry to industry.

We have seen how capital, once in existence, perpetuates itself; we must now discover the conditions under which it comes into existence. It may at first appear that capital comes into existence whenever a productive instrument is created. Reflection shows, however, that this cannot be true, for a new capital good often merely embodies the capital formerly existing in a capital good which has reached the limit of its usefulness.

When a man employs, in producing a tool or a stock of the materials of production, time which he would otherwise have used to procure for himself the means of immediate enjoyment, he is creating capital. These capital goods are not merely replacing capital goods previously existing; they are a net addition to the stock of productive wealth at the command of society, which like other capital goods will for the future maintain themselves. When a man uses, to employ workmen in the production of capital goods, a part of his income which he would otherwise have spent for consumer's goods, he is causing new capital to be created; or, we may say, he is indirectly creating capital. When he uses part of his income to buy capital goods that are already in existence, he is creating new capital by a still more indirect process. Thus if a man buys a threshing machine out of his savings, he places in the hands of the manufacturing company purchasing power with which the company can hire men to make another machine. The process of creating new capital may take a yet more roundabout course. The man who saves may invest his savings in a share of railway stock—which is nothing more than an evidence of ownership of property already existing. The man who sells the share of stock may use the proceeds to buy a share in a manufac-

turing company. Here again it is evident that nothing new is created. The seller of the manufacturing stock may, however, use the money to buy a share in a new manufacturing company, and this company may employ the proceeds to hire men to produce new capital goods for use in its business. Evidently it is the man who saved the money in the first instance who is the true creator of the capital thus added to the stock of society.

Under present conditions the process of creating capital is usually indirect. One man saves and other men produce the concrete capital goods in which the savings are invested. Of course it sometimes happens that such a complicated process fails to attain its proper end. One man may save \$100 and buy a share of stock from another man, who uses the proceeds to meet his current expenses. In this case no new capital is created. What has happened is that a part of the existing fund of capital has changed hands. But normally men avoid trenching upon their capital; accordingly we are justified in regarding each act of saving as the creation of new capital.

Just as it is improper to regard the creation of a capital good as in itself a creation of capital, so it is improper to regard the destruction of a capital good through use as the destruction of capital. For during its lifetime a capital good produces, as we have seen, a replacement fund. After the capital good has been destroyed the capital exists under another form—as money or as other productive goods constituting a replacement fund. The capital is destroyed only if the replacement fund is used for consumption instead of being reinvested in productive wealth.

Capital is a fund of productive wealth embodied in concrete capital goods. We must now ascertain the nature of the productivity of capital goods and of capital, and the methods by which such productivity may be measured. For that the business man does measure the productivity of each capital good and of each unit of capital is evident. Other-

wise how could he know how much he can afford to pay for the capital goods which he buys or for the capital which he borrows?

In the case of some classes of capital goods the test is easily made. Thus if one wishes to know how much a ton of fertilizer will produce, he has only to apply it to one of two acres of ground of practically equal fertility. The difference in the product of the two acres, less the cost of labor employed in applying the fertilizer, is a fair test of the productivity of a ton of fertilizer. We may term this the gross product of the capital good. After deducting from this product a sum of value sufficient to replace the fertility destroyed through the year's cropping, whatever remains is the net product of the capital good.

It may be that in the existing state of agriculture satisfactory crops cannot be produced without the use of a certain amount of fertilizer. Let us suppose that five tons per acre are generally applied to land of a given grade. No practical farmer will be at pains to ascertain how large a share of the crop is the product of this amount of fertilizer. But if there is a possibility that an additional ton will pay, progressive farmers will experiment with that additional amount. In practice men get an idea of the productivity, not of every part of their supply of a given kind of capital goods, but of that part of the supply which is least essential to the conduct of their business. It is the productivity of this least essential part of the supply that it is most important to know, for this knowledge shows whether one should increase his business or restrict its scope.

Productivity, in the case of such capital goods as fertilizer, is ascertained through the effect of the removal or the addition of a small quantity of the capital good. Some capital goods do not readily admit of any such process of experimentation. Thus it might be difficult to determine the productivity of a field, apart from that of the seed, fertilizer, machinery and labor employed in connection with it. Of

course one might leave one acre untilled, employing all the labor and auxiliary capital on the rest of the field. The total product would be less than it would have been had all the field been tilled; and this diminution in product would indicate roughly the productivity of an acre of ground. This method is a clumsy and expensive one, and so far as I know is never employed in practice. It is, moreover, unnecessary, since the productivity of labor and of auxiliary capital employed upon the land may be determined, for the most part, by the method already illustrated. Hence we may arrive at the gross product of the field by subtracting from the total product of the farm the values produced by the labor and the auxiliary capital. By subtracting from the gross product of the land a sum of value sufficient to replace the elements of fertility destroyed in the course of the year, we arrive at the net product of the land.

The cotton manufacturer would find it impossible to distinguish, in a physical sense, between the product of his looms and the product of his engines. Neither looms nor engines would produce anything the one without the other. The manufacturer can, however, ascertain how much greater the productivity of one kind of loom is than that of another; similarly, he can measure the differences in productivity of different types of engines. Now it is exactly this that it is of practical importance to know. If one intends to manufacture cotton cloth he must have some kind of looms and engines. But what kind? One kind of loom costs x ; another kind, $x+y$. What the manufacturer needs to know is whether the extra product of the more expensive loom is sufficient to maintain the capital which we have represented by the symbol y . Unless it does this, the manufacturer will have to employ the cheaper loom.

From the foregoing discussion it appears that the productivity, not of every form of capital goods, but of only those that are in a position which makes it possible to dispense with their services, is readily determinable. Marginal

productivity is the only form of productivity that is definitely ascertainable. What determines marginal productivity we shall consider in the next chapter.

It is obvious that the productivity of capital goods must vary widely, since some capital goods must produce enough to replace themselves every day while others need only a trifling allowance for repair. Thus \$100 worth of coal—a day's fuel for a factory—must yield in one day a value of at least \$100. Let us suppose that it does a little more than this—that it produces each day \$100.02. Every day, after replacing his fuel supply, the factory owner may set aside two cents—the net product of the coal. In the three hundred working days of the year the net earnings of all the coal consumed will be \$6. In the same establishment there may be a machine costing \$100 which produces a gross return of only \$16 during the entire year. Yet \$10 may be enough to keep the machine in repair and to provide a year's proper contribution to the replacement fund. Six dollars will then be the net product of the machine.

Now, the net product of capital goods is what we mean by the product of the capital invested in the goods. The \$100 worth of capital invested in coal produces two cents a day, or \$6 a year; the \$100 invested in the machine produces an identical sum. While capital may differ in its productivity under different circumstances, there can be no such variation as in the case of capital goods. The productivity of the latter must vary on account of the differences in the time for which the different classes of capital goods can be used. Capital, on the other hand, is all equally permanent; variation in productivity is therefore not inevitable.

It is also obvious that the practical man will concern himself chiefly with the productivity of capital, not that of capital goods. He will strive to place his capital where its productivity is greatest, not to invest it in the goods which yield the greatest gross product. Accordingly, for the future we shall concern ourselves exclusively with the product of

capital, remembering, however, that it is identical with the net product of capital goods.

In order to ascertain the comparative productivity of different investments of capital, we naturally compare the capital sums invested with their respective returns, during a period of time—say, a year. This gives us results which are conveniently expressed in ratios—still more conveniently in percentages. The capital invested in a machine worth originally \$120 yields, let us say \$12 per annum. The ratio of annual product to the value of the capital is then one to ten, or ten per cent. The product of capital during a period of time thus reduced to a percentage of the capital value, is interest, in the economic sense of the term. In ordinary usage, it is true, the term interest is usually confined to payments for the use of borrowed capital. But it is clear that the nature of the return is the same whether one uses his own or borrowed capital.

CHAPTER XII

THE RATE OF INTEREST

In the last chapter interest was defined as the product of capital through a period of time, expressed in the form of a percentage of the value of the capital sum. In order to understand the forces governing, at any particular time, the rate of interest, we must therefore enter upon a study of the productivity of capital, or the net product of capital goods.

For convenience we may begin our study with an examination of the manner in which a practical business man would determine the productivity of a particular form of capital, as, for example, capital invested in agricultural machinery, live stock, and whatever other movable capital goods may be necessary for conducting agricultural operations.

Let us assume that a farmer possesses ten fields, varying in natural fertility from a very high degree to a very low degree. And further let us assume that \$1,000 worth of capital in the form of machinery, stock, etc., or auxiliary capital, is necessary for the tillage of any one of the ten fields.

If the farmer has control over only \$1,000 worth of auxiliary capital, he will of course place it upon the best field. If from the gross product of that field he deducts the cost of labor employed in connection with it, together with a sum sufficient to cover the cost of upkeep of land and stock, he arrives at the net product of his agricultural capital—that is, of fields and stock. How much is due to the bare land, how much to the auxiliary capital? This it would be difficult to say, as neither would have produced anything without the other.

Now let us suppose that the farmer gets possession of

another \$1,000 to invest in auxiliary capital. He may now till the field which is least inferior to the first one cultivated. The joint product of this field and of the \$1,000 of capital will be less than that of the first field because of the difference in natural fertility. Shall we say that \$1,000 is more productive on one field than on the other? The two units of capital are just alike; the two fields are unlike. So it would seem to be more reasonable to assign the difference in productivity to the fields, not to the auxiliary capital. And this is what a practical man would do. If the first field produces \$1,000 and the second \$900, we may properly say that at least \$100 of the product of the first is the product of the land, apart from that of the auxiliary capital.

Is the \$900 produced on the second field the product of the auxiliary capital alone? In a physical sense, certainly not; in an economic sense it is. This sum is what the additional \$1,000 worth of auxiliary capital adds to the farmer's income. \$900 is what he would lose if he were deprived of either of his two units of capital.

With another \$1,000 the farmer is enabled to till a third field, which is somewhat less fertile than the second. Perhaps this field produces \$800 net. If this is the case the farmer will no longer regard the total product of the second field as the product of the auxiliary capital alone. This auxiliary capital produces no more than that on the third field—\$800. The other \$100 now comes to be considered as the product of the land. At the same time, of course, a second \$100 is subtracted from the product of auxiliary capital on the best grade of land. And as the farmer adds unit after unit of auxiliary capital and opens field after field to tillage, the productivity of auxiliary capital steadily shrinks and that of the better land as steadily increases. Perhaps the tenth field yields a net return of only \$100. In such case no one of the ten units of auxiliary capital can be said to yield more than this. The use of no one of the units is worth more to the farmer than \$100, for if any one were

taken away from his control he would replace it with the one employed in connection with the poorest field.

We may demonstrate the same principle on the assumption that instead of ten fields of varying productivity the farmer possesses a single large and uniformly fertile farm. If the whole farm is cultivated extensively by the aid of \$1,000 in movable capital goods, the net product, defined as above, may be \$1,000. A second \$1,000 unit of auxiliary capital would no doubt greatly increase the net product, but the law of diminishing returns forbids us to believe that it would add \$1,000 to the product. Perhaps the second unit would add \$900. This sum then measures the importance to the farmer of either unit of auxiliary capital. The extra \$100 appearing in connection with the first unit of auxiliary capital may be regarded as the product of the land. A third \$1,000 would still further reduce the productivity of each unit of capital and cause a larger share of the total product to be ascribed to the land; a tenth unit might add only \$100. This sum then measures the loss that the farmer would incur if any of the ten units of capital were taken from his control.

In the foregoing examples it has been assumed that the farmer is in possession of a fixed amount of land while the auxiliary capital at his command is subject to variation. This corresponds roughly with the facts of life; yet for the sake of getting a clearer view of the principles governing the productivity of capital we must supplement the above discussion by a reversal of the assumptions. The farmer has, let us say, \$10,000 in auxiliary capital; the amount of land under his control is not determined. If he employs all his auxiliary capital in connection with a \$1,000 tract of land—which we shall call a unit of land capital—he may secure a net capital product of \$1,000. A second unit of land capital may add \$900 to the aggregate net product. As the two units of land are by assumption alike, neither can be said to be more productive than the other; and the second

one, we have assumed, produces \$900. The extra hundred appearing in connection with the first unit of land is therefore ascribable to the auxiliary capital. A tenth unit of land capital may add only \$100 to the product of the business. Under the circumstances, no unit of land adds more. For if any one of the ten is taken from the control of the farmer, what he loses is merely the \$100 that would have been produced by the tenth unit.

The principle involved in the cases that have been discussed may be stated as follows: The productivity of any unit of capital embodied in a given class of capital goods is measured by the amount added to the aggregate net product of a business by that unit which it is least worth while to employ. The same principle holds true of capital in general.

Suppose that a farmer can command practically an indefinite amount of agricultural capital, whether in the form of land or in the form of movable capital goods, but that the amount of labor that he can secure is limited to ten men. With \$5,000 invested partly in land, partly in movable capital goods, he may be able to produce \$5,000 net. We should here find difficulty in determining what part of this sum is produced by the labor, what part by the capital. An additional \$5,000 of capital may increase the aggregate product of the business by \$4,000. This sum we should properly ascribe to the new capital. And as this second unit of capital does not differ in any essential respect from the unit at first employed, and as the removal of one unit of the two would have the same effect as the removal of the other, we may properly regard them as equally productive. The extra thousand appearing in connection with the first unit must then be assigned to the other factor in production—the labor. If a third unit of capital increases the product of the business by \$3,000, this amount will measure the importance of any one of the three units of capital. This is what the farmer would lose if he were deprived of the use of any of

the units. If a fifth unit adds only \$1,000, the product assignable to any unit shrinks to that figure. And of course with each reduction in the product assignable to capital, the product assignable to labor increases.

Up to the present point our study of the productivity of capital has been confined to the single business establishment. We must now consider whether similar principles are applicable to an industry in its entirety. The iron and steel industry of the United States may serve as our type.

The capital at present engaged in the production of iron and steel may be placed at about \$500,000,000; the number of men, at two hundred thousand. Now let us suppose that without any revolutionary change in the demand for iron and steel the capital of the industry is increased by \$100,000,000. What will be the effect upon the productivity of capital in the industry?

It is fair to assume that before the increase in capital those branches of the industry promising the highest profits were already pretty well developed; that the richest deposits of ore and coking coal were already being exploited; that the best manufacturing sites had been selected. To what use, then, will the new capital be put? Some of the enterprisers may attempt to duplicate existing plant. This requires additional labor, and such labor is to be had only by inducing new men to enter the industry or by enticing men away from other iron manufacturers. In either case an advance in wages would follow, which would soon become general throughout the industry. In the old establishments as well as the new this would obviously reduce the share of the aggregate product which capital would receive. Again, the increase in iron and steel products thrown upon the market would lower prices. Thus, while the wages bill of an establishment per unit of product would increase, the value of each unit of product would diminish.

If all the new capital were used simply to duplicate existing plant, the rise in wages would be very great. The

industry would need one-fifth more men than it has at present, and these would be slow to appear unless they were offered very high wages. The fall in prices, moreover, would be a serious one, as the output would be increased about twenty per cent. Accordingly it is clear that the new capital would not be used in this way. Some of it would be employed to develop new branches of the industry, which, under the earlier circumstances, were not regarded as profitable. Some of it would be used to replace worn-out blast furnaces by larger ones, requiring a smaller expenditure of labor per unit of product; some of it to provide better facilities for handling the material in its progress through the shops; some of it to equip the mills with more nearly automatic machinery for manipulating the material. In these ways the pressure upon the labor supply would be somewhat relieved, and prices would be kept from sinking too low. The fact remains that the capital would be less productive after the increase than before it; wages would be higher and prices lower. The increase in the aggregate capital of the industry, other things equal, would reduce the productivity of each unit.

The same principle is still more clearly applicable to industrial society as a whole. The iron and steel industry can relieve the pressure upon its labor supply by inducing men to leave other industries. If the capital of society as a whole increases, a similar pressure is placed upon the labor supply, for which there is no ready means of relief. The existing capital is normally sufficient to provide every one who desires to work with the necessary appliances. If, then, the capital of all industries increases more rapidly than the population, the average capital employed with each laborer must increase. Such increase in capital must be embodied in improvements upon existing appliances, and owing to the operation of the law of diminishing returns, will increase the product of industry less than an equal amount of capital did when the social fund was smaller.

There are of course conditions under which an increase in capital may not result in a reduction in the productivity of capital. If, for example, the labor supply increased more rapidly than the supply of capital, a larger share of the joint product of labor and capital would be imputable to the latter factor in production. Again, suppose that some cheap method of draining extensive swampy regions or of irrigating vast tracts of arid land were discovered. Capital would then abandon the least productive existing investments and flow into the new fields thus opened. The product of capital on the least attractive fields—which is the measure of the productivity of capital in all fields—would be greater after the change than before it. In like manner, an invention may increase the efficiency of capital throughout an industry and lead to the withdrawal of capital from the least productive investments and to an increase in the general productivity of capital.

It has already been indicated that an increase in the amount of capital invested in one form of capital goods without a corresponding increase in the capital invested in other forms will reduce the productivity of capital in the one form while increasing the productivity of capital in the other forms. By placing more and more auxiliary capital upon a given area of land one must ordinarily reduce the productivity of auxiliary capital and increase the productivity of land. It will naturally be the aim of the business man to keep his capital uniformly productive; if he has too much auxiliary capital he will endeavor to get more land, and *vice versa*. He will ask himself: Would it pay me better to invest my next \$1,000 in land or in auxiliary capital? And he will continue to direct his investments toward whichever class of capital goods is for the moment the more productive, until the superiority of that class disappears. Of course to do so implies the necessity of taking some land away from his neighbors. If he cannot do this, he must soon cease to extend his business.

Similarly an entire industry may expand with more or less symmetry, distributing its new capital among the various classes of capital goods of which it stands in need. If the beet sugar industry expands, not only are more factories constructed, more machinery for the cultivation of beets purchased, but more land is drawn into the service of the industry. This land is, of course, taken away from other industries—wheat culture, dairying, etc. The increase of auxiliary capital in the industry may, therefore, not materially affect the productivity of capital invested in land.

When the social fund of capital increases, on the other hand, it is not possible for a symmetrical increase in all classes of capital to take place. The land, we may suppose, is already almost all in use; the best mines are opened; the most available courses for railways and canals are already occupied. These things the new capital cannot duplicate. On the other hand, steel rails, locomotives, factory buildings and thousands of other forms of capital goods are readily duplicated. It follows that with increase in social capital that which is invested in the former class of goods will probably increase in productivity, while that part which is invested in the latter class of goods will decrease in productivity.

When, however, we speak of the productivity of capital in general, or of the rate of interest, we usually take as our test the productivity of new capital—and this, we see, is practically the capital in goods which are capable of duplication. And instead of thinking of the old capital in non-duplicable goods as more than normally productive, we are likely to revalue the capital in such forms. Ten years ago, let us say, a five-acre lot gave rise to as large a net product as a threshing machine. To-day the same piece of land yields twice as large a net return as a threshing machine equal in value to the one of ten years ago. We might say that the capital in land has doubled in productivity. But it is more usual to say that the land represents

twice as much capital as the threshing machine, to-day, although it represented no more capital than the threshing machine ten years ago. By a similar process of revaluation the productivity of all capital which is abnormally productive is reduced to the general level. This process of revaluation will receive our further attention in the next chapter.

Even capital which is embodied in capital goods that are capable of reduplication may at any given time vary widely in productivity from establishment to establishment or from industry to industry. It is only by experimentation that the actual productivity of capital can be determined; and owing to the changing character of modern industry the process of experimentation must go on without ceasing. Accordingly there are always chances of mistakes in investments. A cotton manufacturer may overestimate the productivity of capital in a given type of loom; after purchasing and installing the machine he must content himself with what it will produce, even though he knows that the same amount of capital would in another form yield a far higher return. Cotton manufacturers as a class may overestimate the future demand for cotton goods, and so may be led to invest heavily in buildings and machinery which prove incapable of returning the normal rate of interest on capital. At the same time the shoe industry may be undersupplied with capital; for a time, at least, every one hundred dollars invested in the industry may yield an abnormally high return.

Such disparity in the productivity of capital in the two industries would, however, tend to disappear. The capital invested in new cotton mills would, of course, be fixed in the industry for a long period of time. But in the industry as a whole there are always some mills that are about to be dismantled, having reached the limit of their useful existence. These mills have presumably earned in the past a sum sufficient to replace themselves with new mills of a value equal to that of the original ones. If the cotton industry is suf-

fering from a depression while the shoe industry is highly prosperous, the replacement fund will be diverted to the latter industry. Through the reduction of capital in the cotton industry the productivity of capital in that field is increased; through the increase of capital in the shoe industry the productivity of capital is reduced in that industry. It is easy to see that if this process continues for any length of time the original disparity in productivity must disappear.

The equalization of productivity is hastened by the disposition of new accumulations of capital. The fund of capital, under modern conditions, is constantly growing in magnitude; consequently industries are, as a rule, expanding. The new capital naturally seeks the most productive fields. If, therefore, the rate of return in the cotton industry is abnormally low while that in the shoe industry is abnormally high, the new capital will avoid the former industry and seek investment in the latter. The influx of new capital into the shoe industry reduces productivity there, until at last capital is no more productive in the one industry than in the other. When this point has been reached further additions to the supply of capital are divided impartially between the two industries, reducing productivity uniformly.

It is, of course, possible that the productivity of capital in the two industries may never be absolutely equal. While the tide of new capital is setting steadily toward the shoe industry a new demand for cotton goods or a new method of manufacture may appear and raise the productivity of capital in the cotton industry above that of the shoe industry. Some time will elapse before the change in the relative positions of the two industries is generally known; in the meantime the flow of new capital into the shoe industry continues. Eventually the new capital is diverted to the cotton industry; it may continue to flow in that direction after the cotton industry has lost its relative superiority. We can

only say that a tendency toward equalization of productivity exists; not that the tendency is ever exactly realized.

Our imaginary case will illustrate very well what is actually taking place in industrial society. Only, instead of two industries between which adjustment is to be made, we have thousands, big and little. Accordingly the chances of realizing absolute equality are far more remote. It may at first appear that the chances are so very remote that the tendency toward equalization of productivity is more or less mythical. The owner of new capital, we would all admit, wishes to place it where it will be most productive. But how can he acquaint himself so well with our bewilderingly complex industrial system that he will be able to search out the most productive opportunities for investment? Suppose that a physician saves \$1,000 from his current income. Should he invest it in steel or cottons, or should he seek out some minor industrial field—straw-board or bicycle tires? In all probability he knows little or nothing of the actual possibilities of any one of these fields of investment.

If we examine the process by which new capital actually finds its way into the various industries we shall find that this difficulty is not a very serious one. To a large extent, those who are already engaged in an industry, and consequently know most about it, act as agents for the investment of new capital. If an iron master believes that he can make additional capital yield eight per cent. he will be ready to borrow capital so long as it can be had for a little less than eight per cent. If the cotton manufacturer doubts that he can make capital produce more than five per cent., this is the maximum that he will pay for loanable capital. If then the supply of loanable capital is limited—and it always is limited—those industries promising the highest returns will bid a little higher for it, and draw it away from the industries yielding low returns. All that the investor has to do, in order to place his capital in the more

productive fields, is to accept the highest rate of interest he can get.

But not all new capital finds its way into industry through loans. Some of it originates in the very industries that are expanding, and is directly invested by the income recipient. Some of it, though originating outside of the industry, is invested without the agency of an intermediate borrower. Thus a new joint stock company may be launched in the cotton industry. Its capital is obtained through the sale of stock and the buyers of this stock are probably of divers trades and professions. Each purchaser of stock is nominally investing on his own responsibility. But those investors who know nothing of the business, unless they are very reckless, do so only after they have found that men who do know something about the business consider it a profitable venture.

It is, of course, to be remembered that the productivity of capital is not the only thing that an investor takes into account in deciding in what industry he shall invest his savings. In some investments the danger of losing all or a part of the capital invested is great. Capital employed in developing the asphalt deposits of Venezuela may be highly productive. But there is a chance that the existing government of Venezuela, from which title to the asphalt deposits is derived, may be overturned, and a new government may confiscate the capital invested in the business. Capital invested in street railways in the lesser cities may be very productive. But if those cities do not follow a consistent policy in chartering new companies, it is possible that at any time rival lines may be established on parallel streets and, if unable to make large returns themselves, they may, nevertheless, reduce the return on capital invested in the original lines to almost nothing. The capital still remains in the possession of the investor, but it is "dead capital." A merchant's capital, invested in a fancy fabric, may promise high returns; but a sudden change in fashion may force the

merchant to sell the goods at a price which not only yields no return on the capital invested, but which entails an actual impairment of the capital fund itself.

Some risk, it is plain, inheres in every business; in some fields of investment, however, the risk is so small as to be negligible, while in other fields no prudent investor can disregard it. Other things equal, the vast majority of investors will prefer to invest in the safer fields. A disproportionately large share of the capital of society therefore seeks the safer investments, and as a result the productivity of capital in such investments falls below the rate of return to capital in the more hazardous investments. And thus it is that there appears a regular variation in the productivity of capital corresponding with variations in risk.

It is, of course, clear that it is not actual risk, but estimated risk that affects the distribution, and hence the productivity of capital. It is quite possible that the risk of losing capital invested in real estate in Texas is less than the risk of losing capital similarly invested in New York. But if most of the persons having capital to invest mistakenly believe that the reverse is true, a disproportionately large part of the flow of new capital will enter the New York investment field and reduce the productivity of capital there below the level prevailing in Texas.

In an earlier chapter we saw that risk affected wages only in so far as it affected the distribution of labor; further, that if enough reckless workmen can be found to man the dangerous trades risk will not affect wages at all. Exactly the same thing is true of capital. If there were enough investors who always chose the more remunerative employments for capital, regardless of risk, the hazardous fields would soon be so well supplied with capital that they would yield no higher returns than the safer ones. As a rule, however, capital is far more timid in assuming risks than labor. It is therefore more anomalous to find capital in a hazardous field yielding only normal returns than it is to

find workmen in dangerous occupations receiving only normal wages.

Risk, then, may be regarded as a barrier which prevents capital from flowing freely into some of the more productive fields. It is of course not the only natural barrier affecting the flow of capital. If a particular industry is subject to the universal moral disapproval of a community, most capitalists will refuse to invest in it. Those who are unscrupulous enough to do so may enjoy the high returns that flow from an industry that is under-supplied with capital. Thus high returns are often obtained from capital invested in gambling dens and opium "joints." It is, of course, possible that the investment institutions of a country may be of such a nature that a man can hold stock in disreputable enterprises without the knowledge of his associates, and that investors who have no personal scruples are numerous. Under these conditions the productivity of capital in such ventures will eventually fall to the normal level.

It has been said above that those who are already engaged in an industry, and who have invested their own capital in it, serve as agents for investing in that field the capital of outsiders. But the appearance of the new capital reduces the productivity of that which was originally invested in the industry. Thus it appears that the original investors serve as agents for reducing their own incomes. This they do only because of divided interests—competition. Each enterpriser in an unusually productive industry who can borrow capital at a rate of interest which is less than the productivity of capital in his business can for a time increase his total income by doing so. The effect of similar action on the part of all the other enterprisers in the industry is to reduce the productivity of all the capital in the industry, including, of course, that of the capital originally employed in the field. If all the enterprisers were to act together, it is easy to see that they might find it to their advantage to check the influx of new capital before the

productivity of capital in the industry reached the normal level.

This in fact a monopoly does. Controlling all the opportunities that an industry represents, it takes pains to limit the entire amount invested in such a way that each unit of capital remains highly productive. New capital is thus turned away from the fields controlled by monopolies, and is forced into the fields where the productivity of capital has already reached a comparatively low level.

We may now sum up the foregoing discussion in the statement that the rate of interest on capital embodied in reproducible capital goods tends, in any industrial field, to equal the productivity of the capital thus embodied which is least essential to the economic exploitation of the field; and further that there is a constant tendency toward equalization of productivity and of interest among the several fields of economic activity. If there were no barriers impeding the free action of competition and if changes in economic conditions were sufficiently gradual to permit of complete adjustment of the social fund of capital to the opportunities for its investment, the rate of return to capital would eventually be uniform throughout industrial society. Under such circumstances we should say that the rate of interest on capital is determined by the productivity of that capital which is least essential to the business of society; in other words by the marginal productivity of social capital.

The term interest is often used in a narrower sense, namely, to designate payments for borrowed money or capital. We may consider briefly the laws governing such payments. In former times loans were largely confined to advances to persons who desired to increase present consumption, with the more or less vague hope of obtaining sufficient means in the future to cancel the obligations thus created. Thus the heir presumptive to a landed estate often had dealings with usurers, who advanced the means of present luxurious living. It would be difficult to estab-

lish a law governing the rate of interest on such loans. It varies from one case to another according to the necessities and improvidence of the borrower and according to the greed and cunning of the lender.

In the typical loan transaction of to-day money is borrowed for the purpose of increasing one's equipment of capital goods. What is really borrowed is capital. The laws governing the rate of interest on such loans lend themselves readily to scientific formulation.

Let us suppose that in a certain community there are some business men who can make additional capital yield ten per cent. Of course they cannot employ an unlimited amount of capital in such productive investments. But perhaps they can make an aggregate sum of \$100,000 return a rate of ten per cent. An additional \$100,000 they might be able to invest in such a way as to yield nine per cent. Other business men, less favorably situated, might perhaps be able to make another \$100,000 yield nine per cent. These two classes together might be able to use \$300,000 more in investments yielding eight per cent., and a third class of business men might be able to invest \$200,000 more at this rate. Now, if the entire supply of loanable capital is limited to \$100,000, it is clear that the interest on such capital must be above nine per cent. Otherwise the men enjoying the most productive opportunities for investment would see the men having less productive opportunities securing part of the supply of capital. Indeed, the rate must be very near ten per cent., as the men having the best opportunities will compete among themselves for the limited supply and so force the rate up. If the supply of loanable capital is more than \$100,000, but less than \$300,000, the rate on all the capital would, for similar reasons, be nine per cent. If the supply of such capital exceeds \$300,000, but is less than \$800,000, the rate would be eight per cent. We may state the principle involved in the following terms: The rate of interest paid on loanable capital tends to equal

its productivity in the hands of the business men who enjoy the least favorable opportunities for investment, but whose demand is, nevertheless, necessary to carry off the entire supply of such capital.

It is furthermore clear that the rate of interest on loanable capital must in the end very nearly coincide with the rate of interest on capital directly invested by its owner. If the rate on loans is less than that on direct investments, many who now lend their capital will become direct investors. If the rate on loans is relatively high, many who now invest directly will wind up their business and become lenders of capital.

It must of course be understood that in so far as capital directly invested is more than normally productive on account of the hazardous nature of a business, a discrepancy between the loan rate and the direct rate will persist. When losses occur they fall ordinarily on the capital directly invested. Until a business man's own capital is entirely wiped out he must pay his obligations to the lender in full. Thus the business man's own capital serves to insure the maintenance of the borrowed capital; and the business man naturally deducts a part of the return to the borrowed capital and keeps it for himself, assigning it to his own capital. If such insurance is inadequate, a part of the extra product is transferred to the lender in the form of high interest. Thus the returns to loanable capital vary somewhat, according to degree of risk, but naturally not in the same degree as the returns to capital directly invested.

Again, if capital is abnormally productive in a given industry on account of the existence of a monopoly, this does not profit the lender. The Standard Oil Company may perhaps be able to make capital yield twenty per cent. but if it borrows money it pays only four or five per cent.—whatever the market rate may be. The extra product is retained by the monopoly and assigned to the capital directly invested.

CHAPTER XIII

RENT AND CAPITALIZATION

In popular usage the term rent is applied to any payment which one person makes to another for the temporary use of a concrete capital good or group of goods. Thus rent may be paid for the use of a farm, a house, a piano, a square yard of advertising space on a bill board. In the nature of the case, only those things can be rented which remain practically intact through the period of use. One never rents a bin of coal or a stock of merchandise. Nor does one ever rent goods which can serve their purpose only by entering into permanent combination with other capital goods. No one would think of trying to rent steel beams to be used in the construction of his house. The more nearly indestructible a capital good is, and the more perfectly it yields up its services without losing its identity, the better is it adapted to the renting contract. Thus a field, being practically indestructible, may very well be rented for a period of years, although if its cultivation requires the incorporation of a large amount of auxiliary capital in the soil, in the form of drains or irrigation ditches, the field and the auxiliary capital must usually be rented together. A piano, which is much more likely to be injured, nevertheless lends itself readily to the renting contract because no other capital good enters into permanent combination with it in use.

In economic discussion the term rent may properly be given a more general application. If a man owns and manages a farm which he could let at a rental of \$1,000, we may say that \$1,000 out of his income is really the rent of his farm. True, he does not pay this sum to any one; but neither does he pay any one wages for the labor which he

himself performs. It would be absurd, however, to say that a man earns no wages when he is working for himself. As employer he pays himself wages as workman. In like manner, the man who cultivates his own field may be thought of as paying rent, as cultivator, to himself, as landlord. So, if an ocean transportation company owns and sails a ship which it could let for \$5,000 a year, we may regard \$5,000 out of the proceeds of the company's business as the rent of this particular ship. In this broad sense of the term, rent may be defined as that part of the proceeds of a business which is economically due to a particular capital good. It is the economic product of a capital good, regarded as a lump sum. And as even the most perishable of capital goods yield a product which may be measured in this way, we may strain the ordinary meaning of the term rent so as to include the concrete products of all capital goods whatsoever.

We must be careful to distinguish between the total product of a capital good, or its gross rent, and that part of the product remaining after the cost of depreciation of the capital good has been deducted, or net rent. To arrive at the net rent of a house we must deduct from the gross rent a sum sufficient to meet the cost of repairs, together with a year's proper contribution to a fund for the replacement of the house when it shall cease to be habitable. Even the payment for the use of a field is a gross rent. The field wears out—that is, it loses through cropping a part of its original or acquired fertility. The owner of the field must, therefore, set aside a part of the product of the land to restore the fertility of the soil.

While the term rent is, as has been said, properly applied to the product of any concrete capital good, we shall in this chapter confine our study to the rent of those classes of goods that are of such a nature as to permit the transfer of their uses under renting contracts. The distinguishing characteristic of this class of goods is that the capital

embodied in them is fixed there, for a considerable period of time at least. It takes perhaps ten years before the capital invested in a boat can migrate to some industry upon the dry land. The capital embodied in a well-built house may be fixed there for fifty years; and the capital invested in a field, in a tunnel or in an excavation must remain where it is forever. It is true that you may take *your* capital out of a field; this you do when you sell it. But what you really do when you sell the field is to transfer your claim to the capital it represents to another person. The capital in the field is the same after the transaction as it was before it. Such permanently invested capital may be contrasted with the capital invested in transitory forms, as coal, raw materials, merchants' stocks. The capital invested in these forms returns to its owner in a relatively short time in the form of purchasing power, and may be reinvested in any one out of a thousand different classes of capital goods. The return to such transitory goods is most conveniently calculated as a percentage return to the capital invested in them. It is natural to think of the return to a farm or a building as a certain sum of money, or a rent. One may, of course, translate the rent into terms of interest on the capital invested in the farm or building. On the other hand, it is natural to think of the return to a merchant's stock in trade as interest on the capital invested in the stock, although it would be quite possible to arrive at the returns to the stock by adding together the net products of all the capital goods whose services have been used. It will be noted that net rent, in the sense in which the term is used here, is nothing but interest under another form. Reduce the rent to a percentage of the capital value embodied in the goods which produce the rent, and what you have is interest.

In an earlier chapter we saw that there are two ways of arriving at the product of a concrete capital good, or its rent. One way is to withdraw the capital good from the

productive combination into which it enters, noting the shrinkage in product that follows. The other way is to deduct from the gross receipts from a group of several goods the shares (if these can be independently ascertained) that are due to all of the goods except one. What is left is of course the product of the remaining good. Either method may be employed in ascertaining the rent of many capital goods; but the latter method is most frequently employed in the case of goods that lend themselves readily to the renting contract. If one wishes to rent a steam thresher, for example, he will first of all inquire what the gross earnings from the operation of the machine are likely to be. Perhaps such earnings will average \$20 a day. In order to operate the thresher, it is, of course, necessary to employ labor and auxiliary capital goods—as coal and machine oil—in connection with it. The labor must be paid for at the prevailing rate of wages; coal and oil must be paid for at the market price. There are accordingly definite sums that must be deducted from the gross receipts from the operation of the machine. Whatever is left after these charges have been met—possibly \$10—is the gross rent of the machine for the day.

In the foregoing example the cost of labor and of coal, etc., are regarded as preferred charges upon the earnings of the enterprise, and this indeed they are. The operator of the threshing machine must pay at least the prevailing rate of wages, or he cannot get labor to run the machine at all. Similarly, he must pay the market price of coal. Labor and coal have a multitude of uses outside of the business of threshing; if not properly rewarded in that business they go elsewhere. The machine, on the other hand, cannot seek other employment. It is committed to a particular function; consequently it cannot enforce any claim for a specific remuneration. The machine is, as it were, a residuary claimant. And this is more or less true of most of the capital goods that are actually rented. Economists there-

fore find it convenient to treat rent as though it were always determined in this way.

A steamship building company, not having sufficient orders on hand, launches a freighter on its own account, trusting to the chance that some ocean transportation company will be ready to pay a fair rental for its use. What will determine the rent that the transportation company will offer to pay? The managers of that company can probably estimate pretty accurately what the gross receipts from a year's operation of such a ship would be. Let us say that the estimated gross receipts are \$25,000. From this sum must be deducted the wages of officers and men, \$7,000; charges for pilotage, harbor dues, etc., \$1,000; the cost of coal and provisions, \$10,000; miscellaneous expenses, \$1,000. Nor is this quite all. The \$10,000 invested in coal and provisions—supposing that the transportation company must purchase the whole amount at the beginning of the year—is capital that would in any other field earn \$500 interest. This sum must therefore be added to the preferred charges of operating the ship. The \$5,500 remaining out of the estimated gross receipts is the maximum rent that the transportation company can pay for the use of the ship. This sum, the gross rent of the ship, includes, however, payment for the depreciation of the ship through one year's use. If this amounts to \$1,000 we have remaining the sum of \$4,500 as the net rent.

Similarly the gross rent of a farm is found by deducting from gross receipts a sum that is sufficient to pay the wages of all labor employed in cultivating it; to replace all capital goods used up; to keep up the efficiency of all stock and machinery, together with interest at the prevailing rate on the capital invested in such movable capital goods. To arrive at the net rent we must deduct from the gross rent thus determined whatever may be necessary to keep buildings, fences, etc., in repair and to restore to the soil any ele-

ments of fertility that have been destroyed in the year's cropping.

In the cases that have been cited the rent-yielding object was a group of capital goods, more or less securely bound together in use. The farm, for example, may be analyzed into several distinct factors. One factor in the group is the bare land; another factor consists of improvements merged in the soil, as drains or irrigation ditches; a third factor consists of farm bulidings, fences, tree plantations, etc. Some part of the rent must be ascribable to each one of these factors. The productivity of such a factor cannot be found by withdrawing it; nor can it be found by treating it as a residue, after ascertaining the shares of the other factors combined with it, for these shares cannot be ascertained directly. There remains the method of comparisons. How much more will a well-drained field yield than another field in the vicinity, of apparently equal natural fertility, but without drains? By such comparisons it is usually possible to tell pretty nearly what each factor in a permanent combination of capital goods is producing. One may distinguish in this way between the rent paid for a city house and the rent paid for the ground it stands on, although the two rents usually make parts of a single payment. Find an equally spacious and costly house in a suburb, where a building lot is to be had for practically nothing. The difference in the rent of the two houses is a fairly accurate measure of the rent of the city lot.

The rent of a ship, a building or a machine, may, as we have seen, be ascertained, in the first instance, by subtracting from the gross receipts arising from its operation a sum covering all other expenses connected with its use. The value of such a rent-bearing object does not immediately affect the amount of rent it yields. A ship that yields a net surplus of \$5,000 above operating expenses may be worth \$50,000 or \$100,000. The value of the ship has nothing to do with the amount of rent that its owner will receive in the

immediate future. But a ship is a capital good that requires periodic renewal. Out of 1,000 ships sailing the ocean to-day probably fifty are near the end of their economic existence, and will have to be replaced by new ships if the existing tonnage is to be maintained. Now, if the rent of ships happens to be so low as not to pay the ordinary rate of interest on the capital invested in them, no new ships will be built to take the places of those that are no longer seaworthy. The aggregate tonnage will thus be reduced; freights will be advanced until the rent of ships rises to a figure which affords a normal return to shipping capital. If, on the other hand, the rent of ships represents an abnormally high return to capital, more ships will be built, and freights will decline until the rent of ships is only sufficient to pay a fair rate of interest on the capital invested in them. And this is in general true of the rents of all capital goods requiring periodic renewal. For a time the rent may be too high or too low to afford just a normal return to the capital invested in such goods. In the long run, however, the rent is controlled by the prevailing rate of interest.

We have seen how it is possible to distinguish the rent of the bare land from the rent of the improvements fixed in it. The rent of the land as such is practically of more importance than the rent of any other class of capital goods, as land is more frequently held under lease than any other class of capital goods. For this reason, and because land rent displays certain peculiar characteristics, it is worth while to devote especial attention to a study of the laws determining it. This does not mean that we should follow the earlier economists in treating ground rent as a peculiar form of income, to be sharply distinguished from all other rents.

Let us assume that the construction of a railway throws open to exploitation a large section of territory in the British Northwest, and that all the land is at once bought up by wealthy persons who intend to hold it permanently, par-

celing it out in tracts suitable for tenant farmers. We shall further assume that the owners of the land leave its equipment with auxiliary capital goods entirely to the tenants, and that the deterioration of the land is so slight as to be negligible. Whatever the tenant can be made to pay, under these conditions, is practically the rent of the bare land.

In making up his bid the tenant will have to estimate, on the one hand, the gross receipts from the land which he expects to occupy, and, on the other hand, all expenses of cultivation, including the wages of all labor employed, his own as well as that of hired hands; interest on the auxiliary capital which he furnishes, whether his own or borrowed capital; and a sum sufficient to replace or repair capital goods destroyed or impaired through use. Let us suppose that all these items of expense amount to \$1,000. If the tenant has reason to believe that one year with another the gross receipts from the farm will be only \$1,000 he will pay nothing at all to the owner of the land for its use. If on the other hand he believes that the gross receipts will be \$2,000 he will be prepared to pay a rent of \$1,000.

It is obvious that what the tenant can afford to pay for the use of the land depends, in large measure, upon the rates at which he must reckon the wages of labor and interest on auxiliary capital. If these rates are high the deductions from gross receipts to be made in calculating rent will be large. Accordingly, in order to arrive at the forces determining the rent of land in the section which we are studying, we must examine the influences affecting the local rates of wages and interest.

Land in the Canadian Northwest, as in every other part of the world, varies in natural fertility and in accessibility. If the supply of auxiliary capital and of labor is very small, only the most fertile and most accessible lands will be cultivated at all. The owners of slightly poorer or slightly less accessible lands will of course derive no revenue from them; they could afford to let such lands for a nominal rent. On

these lands, then, labor and auxiliary capital are free to divide between them whatever they can produce. The labor and auxiliary capital employed on the better land can demand at least as much for themselves; if this is refused they will migrate to the unoccupied fields.

Now let us suppose that a new body of laborers, bringing with them the appropriate auxiliary capital, enter the region. These occupy the lands which in fertility and accessibility are least inferior to those first cultivated. If after this accession of labor and capital any one is dissatisfied with wages on the better lands, he may, as before, migrate to land still remaining unoccupied. But the unoccupied land is now more remote and less fertile than was that existing before the accession of new labor and capital, and the product of labor and capital on such lands will be less. The cultivator of the better grade of land will, therefore, not have to pay so much for either factor as before. A larger share of his gross receipts may therefore be paid out in rent. And with every increase in the labor and auxiliary capital of the community, remoter and less fertile lands are brought under cultivation, with consequent decline in wages and in interest on auxiliary capital, and increase in the rent of all the better grades of land. At any particular time we may say that in this community the wages of labor and the interest on auxiliary capital are determined, respectively, by the productivity of labor and of auxiliary capital on the poorest land actually cultivated. This is of course only a special instance of the law stated in earlier chapters, that wages and interest are determined by marginal productivity.

If we exclude from our consideration the relation of the community which we are studying with the rest of the world, we may say, as did the classical economists, that the rent of any piece of land is the difference between the value of what is produced on that land and the value of what can be produced by an equal amount of labor and auxiliary

capital on the poorest land actually in cultivation. But we cannot suppose that any such community will long remain unrelated with the rest of the world. If the wages of labor in the community are higher than the wages of similar labor in older centers of civilization, population will increase through immigration; poorer and poorer lands will be brought under cultivation; the wages of labor will fall, until there is no longer special inducement to immigrate. In a similar manner capital for investment in agricultural stock will flow into the community so long as the rate of interest is above the rate prevailing elsewhere. Thus the ultimate forces controlling wages of labor and interest on auxiliary capital are the forces that determine the rewards of these economic factors in the industrial world at large. General wages and interest are determined, we have seen, by the marginal productivity of labor and capital, respectively, not only in agriculture, but in manufactures, mining, transportation, and all other fields of economic endeavor. And as the productivity of labor and auxiliary capital in the general economic field increases or diminishes, the shares of these agents in our imaginary community increase or diminish. The rent of land, in the community, increases as these shares diminish and decreases as they increase.

From the fact that when labor and capital flow into a new region the rent of land steadily rises, it is often assumed that the aggregate of land rents is constantly increasing. But it is to be borne in mind that when labor and capital are drawn into a new region, the older communities may come to be less fully supplied than before. And this would increase the shares of labor and of auxiliary capital in those communities, and reduce the share that is assigned to land. The increase in rents in America, in the last half century, has in some measure been offset by a decline in rents in Europe. If, however, population and capital in reproducible forms continue to increase, without any corresponding increase in the amount of land accessible to the cultivator, and without

improvements that increase the general productivity of labor and capital, the aggregate of land rent must increase.

In the foregoing example we have assumed that the value of the product of a farm remains fixed, while the rates of wages and interest vary. Let us now see what would be the effect on rent of an increase in the value of the product—which we shall assume to be wheat. Such an increase might be brought about by a reduction in the cost of transportation. For the local price of wheat is practically equal to the price in England, the great wheat market of the world, less cost of transporting the wheat thither. If the cost of transportation is reduced five cents a bushel, the local price of wheat will rise five cents a bushel.

If the growers of wheat are forced to rely upon the local supplies of labor and capital the effect of the rise in the price of wheat will be an increase in wages of labor and interest on auxiliary capital; the rent of land will scarcely be affected at all. For under the conditions assumed, wages and interest are determined by the value of the product of these agents on the poorest lands in the community actually in use. The value of this product will be increased by the rise in the price of wheat; hence wages and interest will rise throughout the territory. The cultivator will have greater gross receipts, but he will have greater deductions to make under the heads of wages and interest. There is no reason why the surplus, or land rent, should rise at all.

If on the other hand close relations have been established between this region and the rest of the world, so that wages and interest are determined by the general influences prevailing in society, practically the whole of the advance in wheat prices will be applied to rent. For suppose that at first wages and interest are raised above the general level. Additional labor and capital will flow into the region; competition will arise for employment on the better lands, or worse lands will be put under cultivation. Thus the marginal productivity of labor and of auxiliary capital will be

reduced and the rent of land will increase, until labor and capital are rewarded no better than they were before—that is, until land rent has absorbed the entire benefit of the increase in price. It is true that the withdrawal of labor and capital from the general field that this movement implies will tend to raise the rewards of these agents slightly. But this influence will be hardly perceptible.

We can now understand what it is that forces up rents in the vicinity of a growing city. The value of the gross product of a given area is constantly increasing, as a result of increased demand, while the charges to be deducted, wages and interest on capital in reproducible forms, are controlled by general laws which are affected only slightly, if at all, by the growth of this particular city. Similarly with the rent of city lots. The aggregate profits from the business that may be transacted on a given ground space increase with the growth of a city, and as wages and interest on reproducible capital do not increase in equal degree, a larger surplus is left for the owner of the land. It is obvious that the same reasoning will apply to the rent of a railway or a canal in a rapidly developing region. The route of railway or canal is a capital good which cannot readily be reproduced. Accordingly, if the aggregate business to be carried on increases, an increasing share of the value product of the business will take the form of rent on the irreproducible elements.

In all the cases that we have examined, an important factor in raising rents of land and similar capital goods is the influx, or possibility of influx, of capital and labor from the general field. If we view society as a whole, there is, of course, no possibility of a similar influx of labor and capital from outside regions. Nothing can transfer to the owners of land the benefits of increased value product except increase in the aggregate supply of labor and auxiliary capital. If these agents remain stationary in quantity, while the progress of improvements raises the productivity of those

units placed at the greatest disadvantage—that is, if general wages and interest rise—it is obvious that the rent of land may fall. So also if population and auxiliary capital decrease in amount. If, on the other hand, labor and auxiliary capital increase so rapidly that wages and the interest on such capital fall, land rents must in general rise. It is of course possible that increase of capital and of labor may be attended by such great improvements in methods of production that wages, interest on reproducible capital goods, and land rent will all increase. This has been more or less true of the economic development of the last century.

The net rent of a concrete capital good, as has already been indicated, is nothing but the interest on the capital invested in that capital good, expressed in the form of a lump sum. It is accordingly natural that payments which figure in one man's accounts as rent often figure in the accounts of another man as interest. A business man may count as rent the \$10,000 he pays for the use of a store building; the owner of the building may regard the same payment as interest on the capital invested in the building. The business man may have his choice between paying \$5,000 a year for the building, or becoming the nominal owner, giving his note for \$100,000 at five per cent. interest. In the latter case he regards his annual payment of \$5,000 as interest, not rent. Obviously, whether the payment is called interest or rent is rather a matter of legal form than of economic essence.

Given the net rent of a capital good, and the current rate of interest on capital, it is an easy matter to ascertain the amount of capital invested in the good. This process of computing the capital through the net rent is known as capitalization. If a building earns \$10,000 a year, and there is good reason for believing that it will continue to earn the same net rent indefinitely, the simplest way of ascertaining how much capital is invested in the building is to find how large a sum of capital, in general investments, is required to

earn an equal sum. If the general rate of interest is ten per cent., this sum will be \$100,000. If the rate of interest is five per cent., the sum will be \$200,000. In the one case the rent is capitalized at ten per cent.; in the other case at five per cent.

In the case of reproducible capital goods, the net rent alone is no sufficient indication of capital value. The cost of producing similar goods must be taken into account; indeed, this is by far the more important element in the computation. A ship, for example, may yield a net rent of \$10,000 at a time when the current rate of interest is five per cent. It would, however, be a reckless business man who would assume, from these data, that the ship represents a capital of \$200,000, and that he could afford to pay that sum for it. If a similar ship can be built for \$100,000, this sum is the true measure of the capital invested. The net rent of \$10,000 merely indicates that capital in ships is, for the time, highly productive. Soon the supply of ships will, doubtless, be increased and the net rent will fall to about \$5,000. It may be a year before the decline will take place; in that case the buyer of a ship already afloat can afford to pay about \$105,000 for it. This sum may be analyzed into two parts: \$100,000 for the capital in the ship, and \$5,000 for the transfer of the extra productivity of the ship through one year. If several years must elapse before the net rent of ships falls, the second element in the price of the ship will be placed at a higher figure. And if in some way this extra productivity could be made perpetual—if the ship, worth originally \$100,000, could be made to yield indefinitely \$5,000 in addition to the normal earnings of the capital invested in it—the buyer could afford to pay as much for this extra product as for the original capital. That is, he would arrive at the value of the ship, not through a computation of its cost of production, but through a capitalization of its entire net rent.

Now, a tract of land is a capital good in a situation

analogous to that of the ship in our hypothetical case. The capital invested in the land, in the first instance, may have been nothing at all. But if the land yields a net rent of \$5,000 a year, that fact is the only one that buyer or seller will need to consider. For it is not possible that the supply of similar pieces of land at the command of society will be so increased that the net rent will shrink to zero, as would be the case with a reproducible good originally costing nothing. Because of the natural limitation upon the supply of land, there is good reason for supposing that the existing rent will continue to be paid indefinitely. The right to receive the \$5,000 land rent for all time is therefore worth just as much as the possession of a capital in reproducible forms yielding \$5,000 interest annually. If capital in reproducible goods yields, as a rule, ten per cent., the rent of the land will be capitalized at \$50,000; if the current rate on such capital is only five per cent., the rent will be capitalized at \$100,000.

Shall we say that a tract of land that yields \$5,000 rent, and is capitalized at \$100,000, is really a capital of \$100,000, or shall we say that the real capital in the land is only the sum originally employed to clear it and render it fit for economic use? If we adopt the former mode of expression, we shall regard the capital in the land as no more productive than capital in any other form. If we adopt the latter mode of expression, we shall regard the capital in the land as extraordinarily productive. Business men, and many modern economists, adopt the former mode of expression. A property that yields regularly the income of a capital of \$100,000 is a capital of \$100,000.

It matters little what mode of expression we employ so long as we bear in mind the fact that the value of the land is merely the capitalization of its rent at the current rate of interest; that with an increase in the rent of a given tract of land, if interest on capital in reproducible goods remains unchanged, the capital value of the land automatically

increases, until the ratio of the capital value of land to its net rent is the same as the ratio of the capital value of a group of typical reproducible capital goods to their net rent; that with a decline in the interest rate on capital in reproducible goods, the value of land yielding a given rent increases until the rate of interest on so-called capital in land is no higher than the rate of interest on other forms of capital. If the rate of interest on capital in reproducible capital goods falls, it is because the earning power of such goods declines. If the rate of interest on capital in land declines, it is usually because the land is revalued at a higher figure—that is, counts for a larger sum of capital.

We have already seen that with increase in the social fund of reproducible capital the productivity of such capital declines; the rate of interest falls, and a larger share of the product of society takes the form of ground rent. This of itself would have the effect of increasing the capital value of land. The decline of the interest rate affects the value of land further through changing the rate at which a given rent is capitalized. If the current rate of interest is ten per cent., a certain field may produce a net rent of \$1,000. This sum, capitalized at ten per cent., gives a value of \$10,000, which we may, if we choose, call the capital invested in the field. At the end of two decades the current rate of interest may have fallen to five per cent. This would naturally increase the rent of the field in question—perhaps to \$2,000. This rent we must now capitalize, not at ten per cent., as formerly, but at the new current rate of five per cent. The value of the land thus comes to be \$40,000.

CHAPTER XIV

BUSINESS PROFITS

In popular language the term "profit" is usually applied to the net earnings of a business—that is, gross receipts less actual expenses. These net earnings include the return to the capital that is contributed by the man in whose name the business is conducted, as well as his reward for the labors of management. Since political economy extends the meaning of the term "wages" so as to include the reward for the labor of management, and extends the meaning of the term "interest" so as to include the earnings of all capital, whether owned by the business man or not, the scope of the term "profit" must be correspondingly restricted. As the term is used in modern economic literature, it designates a surplus remaining after all costs, including interest on all capital and wages for all labor, have been met.

Profit in this sense of the term forms no part of the income of the capitalist as such, for his claims are satisfied when interest is paid on his capital. It forms no part of wages. It is the proper income of the enterpriser—the man who employs both labor and capital in a business enterprise. What functions the enterpriser performs we must now consider.

Let us suppose that a man of known integrity and business capacity decides to establish a manufacturing business. He may be able to borrow at a stipulated rate of interest all the capital that the enterprise requires. Having command of this capital, he proceeds to acquire a building and the appropriate equipment, and selects subordinates whose duty it is to secure the necessary office force and manual workers. The actual work of the business man himself may be a negligible minimum. His secretaries may collect the information

on which he acts in deciding to found such a business. His attorneys may arrange the details of the loan contract; his banker may find for him the persons who have capital to lend. Even the business of selecting a building and choosing a responsible manager may be given over to salaried employees. What, then, is the connection of the business man with the enterprise? He lends it his name, he assumes legal responsibility for the conduct of the business, and he reserves to himself the ultimate power of approving or vetoing proposals made by his staff. These are the only functions that the enterpriser must necessarily retain.

In real life it would be difficult to discover a man who is an enterpriser and nothing more. It is rarely the case that a man without capital can borrow any considerable amount of it. Lenders demand the security that only the owner of independent resources can give. It would, moreover, be a fortunate enterpriser who could find secretaries and managers who can be trusted to the extent we have assumed. A part of the labor of oversight must ordinarily be performed by the business man himself. The fact that the same man combines in himself the functions of enterpriser, laborer and capitalist does not, however, make the functions indistinguishable.

What we are concerned with in the present chapter is the nature of profit, the income of the enterpriser as such. Profit appears only when the selling prices of the products of an enterprise exceed the cost of those products. We may, therefore, study profit from the viewpoint of the forces determining prices. Or, we may study profit from the point of view of distribution, inquiring into the conditions under which wages and interest fail to absorb the entire net product of labor and capital. The latter will be the point of view of this chapter, as we have already approached the problem from the point of view of prices in the chapters on "Market Price" and "Cost of Production."

If competition were all pervading and instantaneous in

its action, every laborer and every unit of capital would receive precisely the product created by that laborer or unit of capital. Enterprisers would bid against one another so long as labor or capital received a reward inferior to the total value of the product of labor or of capital. Every laborer would produce a value equal to that produced by any similar laborer; the product of all equal units of capital would be equalized. How this equalization of products would be realized we have already seen: through the movement of labor and capital from fields of low productivity to fields of high productivity.

In the existing state of industry, however, competition does not operate thus uniformly and effectively. There are circumstances under which enterprisers as a class hesitate to bid for additional labor and capital even when it would be profitable for any member of the class to do so—that is, when contract wages and interest are inferior to the product of labor and capital. Labor and capital, further, vary in productivity from locality to locality and from industry to industry. There is accordingly a possibility that enterprisers may engage laborers at the rates prevailing in the employments of low productivity and set them at work in the employments of high productivity, retaining for themselves a part of the increased product of the labor. Similar gains may be obtained through borrowing capital where its productivity is low and employing it in fields where its productivity is high. Again, certain laborers may be absolutely dependent upon a single enterpriser for their employment; certain capitalists may be under similar disabilities in the disposal of their loanable funds. In such cases, the enterpriser may fix rates of wages and of interest which do not correspond with the productivity of labor and capital. Profits arising from this source are comparatively unimportant. They appear in such enterprises as are represented by the sweating trade.

We may first examine the conditions under which en-

terprisers as a class obtain a profit through refraining from the competition that tends to force wages and interest to a level where they absorb the entire product of labor and capital. In times of so-called prosperity it often happens that, for reasons which are not generally understood, the prices of almost all commodities rise; or, what amounts to the same thing, the products of labor and capital, measured in terms of price, increase. For a time enterprisers fear that the rise in prices is a merely temporary phenomenon, to be followed, perhaps, by a fall of prices to a level lower than that existing before the rise. So long as enterprisers maintain this attitude, they naturally refrain from enlarging their businesses. No enterpriser attempts to entice away the workmen in the employ of other enterprisers, as he would do if he believed that the high level of prices would be maintained, nor does he increase his demands upon the fund of loanable capital. There is accordingly no reason why wages and interest should rise. The effect of the rise of prices is thus to increase the price of the products of labor and capital without increasing the cost of labor or of the use of capital. If before the rise in prices labor and capital received the whole value of their products, it is obvious that they receive less than this after the rise. A part of the product of labor and of capital remains in the hands of the enterprisers as a profit.

If the high prices are maintained for any length of time, one enterpriser after another decides to enlarge his business in order to increase his aggregate profits. He can do this only by enticing away some of the men employed by other enterprisers, through the offer of slightly higher wages. Those enterprisers, averse to losing their working force at a time of high profits, are compelled to raise wages themselves. And thus a force is set in motion which will eventually raise the cost of labor until it absorbs the whole value product of labor. Similarly enterprisers bid against one another for capital, thus forcing up the rate of interest until

it absorbs the whole product of capital. Thus eventually the general profits of a period of prosperity disappear.

It is a familiar fact that wages and interest vary greatly from locality to locality. A carpenter in Boston does not receive as high wages as he would receive in San Francisco. Interest rates are higher in Montana and Texas than in Massachusetts. Between different countries the differences in wages and in interest rates are much more striking. An American laborer receives wages one hundred per cent. higher than the wages paid similar laborers in most parts of Europe. The wages of labor in China and India are still lower than those of Europe. Interest rates in England and Holland are on the average considerably lower than interest rates in the United States; in parts of Latin America interest rates are considerably higher than in the United States. The explanation of these facts is of course to be found in the differences in the productivity of labor and capital in the different localities and countries. We are here concerned with the effects of such differences upon the profits of the enterpriser.

Let us suppose that an employer of large numbers of unskilled laborers in the United States sends agents to Europe, or even to the Orient, to obtain a supply of labor. What the agent will offer for, say, two years' labor will be the local rate of wages for that period of time together with such a premium as may be necessary to overcome the reluctance of laborers to leave their native land. The cost of labor is thus determined chiefly by the standards of productivity prevailing in countries from which the laborers are imported, while the value of the labor to the enterpriser is determined by American conditions of productivity which are admittedly more favorable. By virtue of the labor contract the employer is thus enabled to retain for himself a part of the product of the labor.

It is obvious that the possibility of obtaining a profit of this nature depends upon the character of the laws relating

to labor contracts. If the enterpriser cannot enforce the contract by law the laborers whom he has imported may desert him before their services have yielded adequate compensation for the cost of bringing them to the country. In the United States to-day, not only would such a contract be unenforceable, but the importation of laborers from foreign countries under such contracts is a punishable offense. This was not formerly the case, and one of the important sources of profits in early American economic history was of the character that has been described. In many parts of the world, especially in the tropics, the same thing is true to-day. There are even companies which make it their sole business to supply enterprisers with contract laborers from China and India. Such companies derive their profit from the product of the laborers, part of which is made over to the company by the enterpriser who employs the laborers.

We need not here consider the reasons that have led to the general condemnation of enterprise that relies for its profits on differences in local rates of wages. What we are more immediately concerned with is the natural limitation upon profits of this nature. Let us suppose that the Chinese coolie in his own home can obtain an annual wage of \$50, while his services on a Spanish-American plantation or other enterprise are worth \$250 per annum. Allowing \$150 for bringing the laborer from China and for his return, and \$50 a year to overcome his reluctance to leave his native land, there would remain, on a two-year labor contract, a profit of \$150 to the enterpriser, if he imported the labor directly, or to be divided between the enterpriser and the coolie labor company, if the latter acts as intermediary.

Under the assumed conditions the business of importing coolie laborers would quickly expand. As the number of Chinese laborers who are willing to leave their native country under such contracts is by no means unlimited, competition among labor importers would force up the wages

offered to the coolies. Again, the increasing supply of coolie labor in the employing region would reduce marginal productivity—that is, the value of the services of a laborer—in those regions. And these tendencies would continue to operate until the profit of the business of importing laborers disappeared.

We may apply the same reasoning to the case of profits arising from the transfer of capital from regions where its productivity is low to regions where its productivity is relatively high. A mortgage loan company may borrow capital in New York at five per cent. interest and loan it in Texas at seven per cent. The loan company thus receives a profit of two per cent. How is this profit produced? Clearly it is a part of the product of the capital set at work in Texas. A Texas enterpriser might have borrowed the capital directly, keeping for himself the profit that would otherwise have gone to the loan company.

This source of profit, also, is one that must eventually run dry. The draining away of capital from New York would tend to raise the interest rate there—though hardly perceptibly, owing to the vast supply of capital in the nation's financial center. The influx of capital into Texas would reduce the productivity of capital in that State, until at last nothing would be gained by further transfer of capital.

In any important industrial center the productivity of labor and of capital may at a given time vary from industry to industry, while the wages of labor and interest on loanable capital vary little, if at all. We may in thought arrange the different industries of such a center in a series, according to degree of productivity of labor and capital in each one. Labor and capital will receive no higher rewards in any industry than in the one that stands lowest in the series. If we assume that in this least productive industry labor and capital receive all that they produce—and we can hardly assume that they receive more than this—we

see clearly that they must receive less than they produce in all the industries higher in the series. In the more productive industries the products of labor and capital afford a surplus above wages and interest, which takes the form of a profit to the enterpriser.

Let us suppose that the American public, awakening to the significance of the ghastly record of railway accidents, insists that steel passenger coaches replace the wooden cars now in use, and withholds its patronage from railway companies that refuse to change their equipment. The demand for steel cars would become enormous; years would have to elapse before the existing establishments could satisfy it. The car building companies, for a time, could sell their output at very high prices. The productivity of labor and capital in such establishments, measured in terms of price, would be abnormally high. But the wages of laborers engaged in building steel cars would be no higher than the wages of equally skilled laborers in any other branch of the iron and steel industries. There would accordingly be a surplus above costs, or a profit to the enterpriser. The car building companies would pay no higher rate of interest on borrowed capital than any other manufacturing companies in the vicinity. A surplus originating in the abnormally high productivity of capital would thus be added to the profit from labor.

In the course of time the existing establishments would increase their capacity and new companies would enter the field. The price of steel cars would fall—that is, the productivity of labor and capital in the industry, measured in terms of value, would decline. The increased demand for labor might slightly raise wages in all the iron and steel industries. Thus the profits of the enterpriser would gradually be reduced, until at last they disappeared altogether.

In any industry the productivity of labor and capital may vary from establishment to establishment, although

there may be no variation in the rates of wages paid. We may, if we like, arrange the establishments in a series, according to the degree of productivity of labor and capital, just as we did in the case of industries of varying productivity. No higher wages or interest will be paid by any establishment than by the establishment working at the greatest disadvantage. As this establishment will pay to labor and capital no more than these agents produce, it follows that the better establishments will not need to pay out in wages and interest the whole product of labor and capital. A profit is left over for the enterpriser.

Differences in the productivity of labor and capital in the same industry may be due to differences in methods of production, to differences in the business capacity of enterprisers, or to differences in the location of plant. If the superiority of one establishment over others arises from better methods of production, it cannot continue for any great length of time—unless indeed the establishment enjoys a monopoly of its method, secured by a patent. In the end the better method of production is adopted generally; prices fall or wages rise until there remains no profit for the enterpriser.

One business man may, however, show greater enterprise than others in adopting new methods as soon as they appear. By the time that any particular invention has become the common property of the industry, the more enterprising business men have introduced some new method, from which they are able to derive profits for a time, until this method, too, becomes the common property of the industry. Thus an able enterpriser may secure a permanent flow of profits from a series of improvements of method, although the profits from each successive improvement are quickly annihilated by competition.

One business man may have greater skill than another in selecting workmen and in maintaining harmonious rela-

tions with them; in deciding just what grade of the commodity which he produces will best suit the needs of the purchasing public; in determining the proper proportions in which to combine materials in the production of commodities of ephemeral demand. Advantages that are secured in this way have a certain degree of permanence. Other enterprisers may adopt methods that are to all appearances the same; yet they may fail of attaining the same results. What they lack is the business instinct with which the more competent enterpriser is endowed. The latter may therefore enjoy a permanent income from this source. Such an income is usually classed with profits; but if we examine it carefully we shall see that it is more properly a special kind of wages. It exists only by virtue of the continued exercise of the faculties, mental and physical, of the enterpriser. For the exercise of such faculties a man might demand, and would receive, a salary if he chose to enter the employ of another instead of continuing in business on his own account.

The income arising from superiority of location may be transient or permanent. It may be that by virtue of proximity to the sources of raw material or of fuel, or by virtue of a cheaper labor supply, a certain grade of cotton cloth can be manufactured more cheaply in the Carolinas than in New England. So long, however, as the Carolinas are unable to supply the demand for that grade of cloth, the price will remain high enough to cover cost of production in New England—that is, high enough to give Carolina producers a profit. If this is the case, enterprisers who contemplate the erection of new mills will naturally choose the Carolinas as their location. Whenever New England mills wear out, their owners, instead of rebuilding in the same spot, will transfer their business to the South. Under the conditions the entire industry will eventually migrate to the more favorable location. The price of labor in the Carolinas will gradually rise and the price of the cloth will gradually

fall until no producer longer receives a profit on account of location.

But let us suppose that in the favored location there is room for only a limited number of establishments. Let us say that on the banks of a certain river, which serves as a cheap means of transportation of raw materials and of finished products, there are suitable locations for only a dozen establishments, while a hundred establishments are required to supply the demand for the commodity which these establishments produce. The price of the commodity will then remain permanently at a figure that covers cost of production in the establishments that do not enjoy the advantages of the favored location. The establishments that do enjoy these advantages will therefore yield a permanent income that resembles profit.

If, however, we analyze this income carefully we shall see that it is not a true profit. If the land on which the establishments stand is held by the enterpriser under lease, he will, at each renewal of the lease, make over to the owner of the land, as rent, a payment corresponding with the so-called profit arising from superiority of location. And this reveals the nature of the apparent profit. It is ground rent, irrespective of the facts of ownership.

All the forms of profit that have been described—so far as they are true profits—are alike in that they are transitory in their nature. The very existence of such profits gives rise to competition, and competition eventually annihilates them. It is evident that if, in any case, competition can be prevented from appearing, profits may be transformed into a permanent income.

We have seen that one of the possible sources of profit is the introduction of a new and more fruitful method of production. So long as the method is confined to one out of a number of competing establishments, prices remain at a level which covers cost of production in the establishments which do not employ the new method. If the new

method of production is really an innovation in industry, and if it is of such a nature as to admit of definite description—as, for example, a mechanical device for saving labor—the enterpriser who invented it may take out a patent, which will assure to him the exclusive right of using it for a period of time—seventeen years, in the United States. During this period he may continue to enjoy the profits arising from the use of the method. He may, of course, sell the right of use to other enterprisers, in which case he makes labor and capital more productive in the establishments buying the right, reserving for himself, in the shape of payments for the use of the patent, a part of the product of these agents of production.

Somewhat analogous to the profits arising from a patent are the profits arising from the use of a trade-mark or from the “good will” of a concern. A certain brand of soap, bearing the name of the man who first placed it on the market, has, let us say, a reputation for purity established by long years of honest business. Another soap bearing another name may be just as pure; but the consumer has no adequate means of determining qualities, and so prefers the brand which he has always believed to be good. It is evident that the manufacturers enjoying such a firm hold on the popular favor can charge somewhat higher prices for goods of a given grade than can manufacturers who have their reputation yet to establish. So a merchant who has established a reputation for upright dealing, or who has succeeded in attracting to himself the patronage of the wealthier classes of a city, can charge somewhat more than can his less fortunate competitors. The public esteem which an enterpriser enjoys—the good will of the business—is sometimes only an insignificant source of profits. Sometimes, however, it is an exceedingly important source. In many cases the good will of a manufacturing or mercantile establishment is worth more than its aggregate tangible assets.

One further source of permanent profits deserves consideration here—monopoly. In the strictest sense of the term the profits from a trade-mark or a patent are monopoly profits. Such profits, however, are limited to one out of a number of competing enterprisers in an industry. The monopoly profit which we are now considering may be enjoyed by all the enterprisers in an industry.

Let us suppose that all the manufacturers of tin plate agree to reduce output twenty per cent. in order to force up prices. If the various producers can be held to their agreements and if new producers can be kept from entering the field, there is no reason why every enterpriser in the business should not enjoy a permanent profit. In the chapter on monopoly price we saw how this can be done. What the monopolists do, from the point of view of distribution, is this: A group of allied enterprisers throw a fence, as it were, around a particular field of industry. They limit the amount of labor and capital admitted to the field, so that the productivity of these agents remains higher than in the unmonopolized fields. The wages and interest paid by the monopoly are no higher than wages and interest in the unmonopolized fields. Consequently there remains in the hands of the monopolistic enterprisers a surplus, or profit.

We saw in the last chapter how it is possible to arrive at the value of a capital good, such as a field, by capitalizing the income at the current rate of interest. Permanent profits may be reduced to a capital value in the same way. If the profit from a monopoly is \$100,000 a year, and if there is good reason for believing that it will continue to be the same from year to year, the monopoly itself is worth as much as a sum of capital that will yield \$100,000 interest per annum. If capital generally yields five per cent., the monopoly is worth \$2,000,000. If the enterprisers having such a monopoly were to sell out their interests, they would demand that sum over and above full payment for all the buildings, machinery, and other tangible assets of their busi-

ness. The same thing is true of the profits arising from the good will of a business. These profits will be capitalized, and the buyer of the business will have to add the capital value of the profits to the value of the tangible capital goods.

The value of a patent is found in a similar manner. The only difference is that the profits from this source cease upon the expiry of the patent. What the buyer pays for is the right to a certain estimated income for a definite number of years. If the annual income is estimated at \$5,000 a year, and the patent has ten years to run, the simplest way of arriving at the value of the patent is to find the present value of each year's income, and add these sums together. If the current rate of interest is four per cent., the present value of \$5,000 due in one year is obviously equal to a sum which, plus interest for a year, will amount to \$5,000. That sum is about \$4,810. \$5,000 to fall due two years hence is worth a present sum which together with compound interest at four per cent. will in two years amount to \$5,000—\$4,625. By a similar process—known as discounting—the value of each year's income may be ascertained, and by addition, the present value of the patent is established.

All profits, whether monopolistic or not, are from the point of view of distribution a part of the product of labor and capital which various circumstances enable the enterpriser to retain for himself. It may therefore appear, at first thought, that the existence of profits is evidence of injustice in the distribution of wealth.

Upon reflection, however, we see that this is not true. Profit in many cases plays an important part in stimulating economic progress; in many other cases the existence of profit serves as a means of distributing the agents of production in such a way as best subserves the interests of society. An income that must exist if society is to be progressive and if the best disposition is to be made of its productive resources can hardly be regarded as unjustifiable.

It is the hope of profits that induces the enterpriser to devise improved methods of production, or to adopt improvements devised by others. In doing this the enterpriser increases the productivity of labor and capital, reserving for himself, as long as he can, the benefits of this increased productivity. But sooner or later the new method finds general application in the industry, and the enterprisers are forced to turn over the benefits arising from it to labor and capital, in the form of increased wages and interest, or to the consumer of commodities in the form of lower prices. In the latter case all laborers and capitalists gain by an increase in the purchasing power of their incomes.

When profits arise from a general increase in the demand for a commodity, the title of the enterpriser to the income is perhaps not quite so clear. But such an increase in demand shows that the amount of labor and capital devoted to the industry affected by the increased demand should be increased. This result can be brought about only through the action of enterprisers. Now, if enterprisers received no profit from enlarging old works and establishing new ones, why should they trouble themselves with doing this? If on the other hand they may for a time keep for themselves as a profit a part of the price of their products they will naturally endeavor to enlarge their works as quickly as possible. When at last as much labor and capital is devoted to the industry as is socially expedient, profits cease through rise in wages and interest or through fall in prices.

Of the forms of profit that are classed as monopolistic, those arising from patented inventions and from good will need no defense. The former is the reward for one of the most important services to society. The inventor can never get for his services, at any time, more than they are worth to society; at the expiry of the patent the invention becomes the common possession of all. The profits arising from good will are a reward for honorable business dealings, and can be retained only so long as the enterpriser is worthy of them.

The profits of an ordinary monopoly stand on an entirely different footing. The productivity of labor and capital in the field controlled by the monopoly is rendered abnormally high not through superior organization and combination of these factors in production, but through the maintenance of an artificial scarcity of them, which is directly opposed to the interests of society. While the action of any one out of a number of competing enterprisers, each striving to increase his own profit, necessarily operates to increase the aggregate wealth produced by society, the action of a combination of enterprisers striving to secure a monopoly profit as necessarily operates to reduce the aggregate wealth production of society. Through his anti-social conduct the monopolistic enterpriser receives a permanent profit, the fruits of other men's labor and capital. The enterpriser who carries on business under conditions of competition receives, as a reward for his important services to society, only a temporary profit.

It appears, therefore, that the elimination of monopoly profit through legislative action, if possible, is eminently desirable. It is, however, to be borne in mind that this cannot always be done without injustice. We have seen that monopoly profit, being permanent, may be capitalized. If a combination of manufacturing enterprises makes possible a monopoly profit of \$100,000, the selling value of the combined enterprise—or of the capital stock representing it—is increased by the capital value of an income of \$100,000. Now, the original promoters of the monopoly do not continue to own it forever. Some of the stock in it may pass to their heirs; some of it may be sold to persons who do not know that a great part of its value is merely the capitalization of a wrongful monopoly profit. If then the profit of the monopoly is eliminated, the latter class of persons find themselves deprived of an income the right to which they purchased in good faith as an income from capital.

CHAPTER XV

MONEY

In the foregoing chapters frequent use has been made of the concept price, which of course implies the concept money, since price is nothing but exchange value, expressed in terms of money. It has been tacitly assumed that money is in general use and that its value remains constant, price fluctuations being due to changes in the conditions of production or consumption of other things. The latter assumption, as every one familiar with recent discussions of economic policy is aware, cannot pass unchallenged. The value of money, like the value of all other things, is subject to continual fluctuations, and these fluctuations give rise to some of the most important problems of practical economics.

What is money? How did it originate, and what functions does it perform? What is meant by the value of money, and how is this value determined? When the value of money changes, what are the effects of such changes upon the welfare of society at large and that of the several classes making up society? What should be the policy of government in respect to the monetary system of a country? These are some of the questions that political economy has for a century or more been endeavoring to answer. Such is the complexity of the problems involved, however, that the conclusions even of professional economists are widely divergent, to say nothing of the differences of opinion among men of affairs.

We may profitably begin our study by considering what it is that the plain man regards as money. Anything that is accepted by practically every one in exchange for his goods or services, with the intention of using it only for the purpose of exchanging it ultimately for other goods or services,

is popularly regarded as money. This view, which is also that of many of the ablest writers on money, we may safely adopt as our own. Under different conditions of economic development, different concrete things have served as money—shells, beads and other ornaments, bits of metal coined or uncoined, and even consumable commodities, like cattle, furs, spirits. With the evolution of trade, a corresponding evolution of money has taken place, those forms of money which were fitted for use when trade was merely an incidental part of economic life giving way to forms of money adapted to a complex system of commerce.

The origin of money antedates all historical records. Nevertheless, we know enough about the life of primitive man to construct a plausible view of the circumstances under which money must have come into existence. In the earlier stages of human evolution exchange, at least in the modern sense of the term, was unknown; hence of course money could not have existed. When it first became customary to make exchanges, goods were doubtless bartered directly for goods, as is sometimes the case even to-day. Certain articles, however, were more frequently the objects of exchange than others, as, for example, strings of sea shells, articles of copper, silver and gold suitable for personal adornment. Such articles, unlike the common necessities of existence, could not be produced by any one desiring them. Not being essential to life, they would naturally be sacrificed by their possessors in time of need. We can easily see, therefore, why articles of this nature should have been among the earliest to be freely purchased and sold. How a medium of exchange evolved from them we can best understand if we try to picture to ourselves the conditions under which the evolution took place.

Let us imagine that in a primitive community, where trade, in the form of barter, has become customary, one man finds himself possessed of a larger herd of cattle than he needs. He may be in great need of an additional slave. Yet

he may be quite unable to find a person who has a superfluous slave and who would desire more cattle. Direct exchange, therefore, is out of the question.

But the owner of cattle may not decide to keep a superfluity of them merely because he cannot get for them exactly the thing that he most needs. He may cast about for some other article against which to exchange the cattle. In common with all primitive men—and some men who are not to be classed as primitive—he has an insatiable desire for ornaments which may arouse the admiration or envy of his fellows. Quite naturally, then, if opportunity offers, he exchanges his superfluous cattle for a silver bracelet. Shortly afterward he may meet with some one quite willing to exchange a slave for the bracelet. The final result of the two transactions, from the point of view of the owner of the cattle, is simply the exchange of the cattle for the slave. The bracelet has served as a medium through which the exchange has been effected. And this is true, although none of the parties to the two transactions is conscious of the fact.

Now let us suppose that the owner of the cattle, at the time of exchanging his cattle for a bracelet, has no particular desire for any other form of wealth. At the end of a year, however, he may come to need a slave, and use the bracelet to procure one. In this case, too, the bracelet serves as a medium in the exchange of the cattle for the slave. It further serves to enable the owner of the cattle to retain their value in his hands until he may desire to transform it into some other useful commodity. Thus the bracelet serves as a store, or repository of value.

It is highly probable that the same bracelet will on frequent occasions perform the same function of medium of exchange and store of value. If there are many similar bracelets in the community, it is quite possible that men will get into the habit of selling their goods for bracelets, with the expectation of using the bracelets merely to buy other goods with. In such case the bracelet ceases to be an ordi-

nary object of use, and becomes money. It will then assume a further function. Whenever men think of buying or selling commodities, they will estimate the worth of such commodities in terms of bracelets. The latter, then, become a measure or a standard of value.

Just at what point bracelets cease to be ordinary commodities and become money it would of course be impossible to say. Some men may accept them solely with a view to a further exchange. Some may accept them primarily with a view to further exchange, yet with the alternative of personal use before them; still others may accept them with no intention of exchanging them for something else. To the first class of persons, the bracelets are money; to the second, neither money nor ordinary commodities but something half way between; to the last class they are merely ordinary commodities. If the last two classes are relatively insignificant, the bracelets are properly money. We do not hesitate to call nickels and dimes money, although certain of the aboriginal inhabitants of the United States perforate all they can obtain and hang them in strings from their ears.

Such articles as bracelets, being primarily designed for personal use, would be an awkward medium of exchange. Ornaments, in order to satisfy the desire for distinction, must differ in form, size, quality. Such differences in articles serving as a medium of exchange, would be a serious handicap to trade. At each purchase or sale it would be necessary to discuss not only the qualities of the article sought or offered, but also the qualities of the article used as money. Hence as trade becomes more common, the articles serving as medium of exchange must become more and more uniform in appearance and quality. In some cases ornaments assume a conventional form, like the sword coin of parts of the Orient. In other cases, representing a later stage in the development of money, the original purpose for which such articles were made is lost sight of; the silver or copper is hammered into forms of more or less regular shape

and uniform quality. In parts of the Philippine Islands, as late as the time of the American occupation, copper disks made by some of the native tribes circulated as money.

A further stage in the development of money is the assumption by government of the exclusive right of making the bars or disks—coins—to be used as money. The disks of metal of private manufacture naturally differed considerably in quality as well as in weight. Such differences, negligible while trade was only slightly developed, became a serious matter when men began to rely upon exchange for many of the commodities of daily use. It seems probable that the purpose of governments in taking over the function of coining money was to bring about the uniformity that an expanding trade demands. Whether this was the original purpose or not, the fact remains, however, that the most important function of government, in respect to monetary matters, is the establishment of uniformity of coinage. In the more advanced nations the coinage is now practically uniform. One gold eagle is in all essential respects as good as another.

For an advanced commercial nation, uniformity in the value of money is, we can readily see, quite indispensable. No less indispensable is variety in the forms of money. In the rural districts of China, where trade is chiefly local and the articles of trade of low value, one kind of coins, and these of very low value, meets practically all needs. In a country like our own, with the greatest variety of business transactions to be performed through the medium of money, a wide variety of forms of money is required. For the smallest transactions it is necessary to have coins of a value which is low, relatively to bulk, as bronze cents, nickel five-cent pieces. For slightly larger transactions, coins of silver, which represent a greater value per unit of bulk, are more convenient. For transactions involving still greater values, gold coins are better adapted than silver; for the largest cash payments, paper money, which may be

of any denomination, is the most convenient of all. How important is this variety in forms of money will be understood by any one who happens to be engaged in business in a town where at times the supply of small coins is not sufficient to meet the needs of petty trade, or in a section where silver coins are employed to the exclusion of paper in all transactions involving \$10 or less.

We may now consider what is meant by the value of money, and how this value differs from that of other commodities. Here also we may gain clearness of view by keeping in mind the probable evolution of money. If the bracelet of our earlier example is accepted by a man in exchange for his products with a view to his personal use, he will naturally value it solely with reference to the satisfaction which he expects to derive from it. If it is accepted with a view to its possible exchange for some other commodity, he will value it partly with reference to the satisfactions to be derived from its use, partly with reference to its power to command other commodities. If the bracelet is accepted solely with a view to further exchange, its value to the man is nothing but its purchasing power. There must indeed be a stage in the evolution when bracelets are valued by some men with reference to their use as ornaments, by others with reference to their purchasing power. When, however, practically every one regards bracelets merely as the means for purchasing other things, the value of bracelets to the community at large is their power to command other things in exchange. Each man will ascribe a high or a low value to bracelets according as their purchasing power is high or low.

Under present conditions all men accept money in exchange for their possessions solely with reference to its employment in the purchase of other things. We may, therefore, define the value of money as its power to command other things in exchange, or briefly, its purchasing power. Other commodities are valued by some men for

what they will bring in exchange, by other men for the satisfaction to be derived from them directly or indirectly. The true cause of the value which men who hold ordinary commodities for sale ascribe to such commodities is the value ascribed to them by those who will use them in the satisfaction of wants. There are practically no men who ascribe value to money as a means of direct satisfaction. In this respect, accordingly, the value of money is a unique phenomenon, requiring special explanation.

The value of money, then, is its purchasing power. How is this power to be measured? Evidently not by reference to any particular commodity. A dollar may buy one and one-quarter bushels of wheat to-day and only one and one-fifth bushels to-morrow. We should not say that the value of money has declined, but that the price of wheat has risen. For there may be many other commodities in respect to which the purchasing power of money has increased. To form a true estimate of the value of money we must consider its power to command commodities in general. In order to measure changes in the value of money, we may form a list of the principal commodities, showing how much of each a dollar will command at different dates. By the method of averages we can then ascertain pretty exactly whether the general purchasing power of money has changed. This method has long been employed by economists, and it has been shown that through long periods of time the value of money fluctuates widely. A dollar will not buy so much to-day as it would have bought ten years ago. Very likely a dollar will buy more ten years hence than it buys to-day.

The factors which determine the value of money, and hence the general level of prices, are so numerous and complex that only a provisional account of them can be given in this work. It is quite generally agreed that, other things equal, the greater the volume of money there is in the world, the lower will be the value of any unit of it. It is of course

true that there are in operation many influences affecting prices besides changes in the volume of money. Hence we cannot say that if the volume of money, twenty years hence, shall be twice as great as it is to-day, prices will be higher than they are to-day. This fact does not make it the less important for us to gain a clear view of the effect of a change in the volume of money.

Let us suppose that through the discovery of a new gold field the world's supply of that metal is perceptibly increased. \$100,000,000 worth of gold, let us say, is taken from the new mines every year. Some of the new gold may be used in the arts; but the greater part of it will find its way to the mints of the nations, and issue thence as coin.

The only use which money subserves is that of purchasing other commodities. The fortunate owners of the new mines will therefore quickly enter the market as purchasers, either of consumable commodities or of capital goods or rights to capital goods—stocks, bonds, etc. There is no reason why the production of goods, whether consumable goods or instruments of production, should at once increase upon the discovery of gold. We may think of the supply of such goods as substantially unchanged. Now, new purchasers, with \$100,000,000 to spend, appear upon the market. It is quite evident that competition for commodities will increase and prices will rise.

Let us assume, for the moment, that the rise in price of the commodities purchased by the first owners of the new gold has no effect in stimulating the production of such commodities. The enterprisers engaged in the production of these commodities, then, will enjoy abnormally large money incomes as a result of the high prices at which they sell their products. They will have more money to spend on other classes of commodities for their own use. As the production of these, we assume, has not yet been affected, they also must rise in price. And so the new gold will percolate

from one economic stratum to another, everywhere raising prices.

Our assumption that the production of the commodities demanded by the original owners of the new gold remains unchanged is purely arbitrary. The rise in prices would probably lead enterprisers to enlarge their mills, or to run them overtime, and this would require more laborers and more capital. The total supply of labor and capital at the command of society has not, however, been affected by the increase in the volume of money. The only way, then, in which an enterpriser can secure additional labor and capital is by enticing these agents away from the employment of other enterprisers. And this, it is evident, must raise the rates of wages and interest in the district where the expansion of enterprise occurs.

After the rise in wages and interest, each laborer has more money to spend; he will therefore increase his purchases of the commodities suitable for his use. The supply of these, however, has not yet increased; their price is forced to a higher level. Similarly the increased money income of the capitalists raises the prices of commodities taken by the members of that class. Eventually not only the price of all finished products, but the price of all raw material and other capital goods, and of all labor, will be affected.

The new gold may be first used to purchase consumable goods, or it may be used to purchase stocks or bonds. In the latter case, the first effect is an increase in the price of these securities. But the sellers of the securities will use the money to buy other things. Eventually the effect must be felt in the market for commodities and labor.

Instead of assuming that the supply of money is increased through new gold discoveries, we may assume that such increase in the money supply is brought about through an issue of paper money by the government. Suppose that the United States Government, in order to finance projected irrigation works, issues \$100,000,000 in paper money. This

money will find its way into circulation through the purchase, by the Government, of additional supplies and the payment of wages to new employees. The supply of steel, cement, and other commodities needed by the Government, however, is not increased at once by the issue of new money; hence the price of these supplies must rise when the Government enters the market as an unanticipated purchaser. Similarly, wages are forced up by the new demand for labor created in this way. Through attempted expansion of business and through increased liberality of expenditure, the enterprisers and laborers first affected by the increase in the money supply transmit its effects, in the form of increased prices, to men engaged in other industries. In the end general prices and general costs are on a higher level than they would otherwise have been.

Not all exchanges are effected through the medium of money. Barter exists even to-day, although this form of exchange may be ignored, as of very slight importance. Many exchanges—indeed, much the greater number, in a society like our own—are effected through the medium of various substitutes for money. Let us suppose that A, a person of unquestioned financial standing, buys of B commodities worth \$100, and instead of paying cash, gives a promissory note, due in six months. B in turn may buy \$100 worth of goods from C, paying for them not with cash, but with A's note, properly endorsed. C may use the same note to effect a purchase. At any given time a vast number of such notes may be at work effecting exchanges, although each one may be transferred only two or three times before its maturity. The effect of the use of such notes as a means of exchange is the same as that of an increase in the supply of money. A man who can use a note in this way is enabled to enter the market for the purchase of goods as he could not have done if sellers all insisted upon cash payment. The effective demand for commodities, therefore, is increased, just as it would be by an increase in money. We need not at this

point carry further the analysis of the effects of the introduction of such substitutes for money, as these effects will receive full discussion in the next chapter.

The value of money, as we have seen, is affected by changes in the volume of money and in the use of substitutes for money. It is also affected by changes in the volume of business to be transacted through the use of money. Where most men produce for themselves the principal commodities which they need, exchanging only their superfluities for luxuries, a very little money will meet the requirements of trade. Where on the other hand men produce almost exclusively for sale, a large volume of money or of substitutes for money is required. If we imagine that men suddenly change from the system of production for immediate consumption to the system of production for the market, without any change in the volume of money and of its substitutes, we can easily see that the price level must be lowered. Where one commodity under the earlier system was offered for sale to the possessors of money, one hundred may be offered under the later system. Some sellers of commodities would then find that at the scale of values originally existing they would be unable to find purchasers with money to pay. They would accordingly reduce prices, and so attract to themselves a part of the money supply. This would leave other sellers without buyers, and these in turn would lower prices. Thus the price level would fall or, what amounts to the same thing, the value of money would rise, until all sellers could find buyers at the prevailing prices.

The assumption that the system of production could change thus rapidly without a change in the volume of the media of exchange involves unrealities, as we know that exchange and the medium of exchange must evolve together. Yet it points to a real fact: that exchange may expand more rapidly than the volume of the media of exchange, necessitating a lower price level.

It must now be evident that changes in the volume of

money are not alone sufficient to explain changes in the value of money, or price changes. The development of substitutes for money and changes in the volume and character of business transactions must also be taken into account. Therefore, although we may say that an increase in the volume of money will, other things equal, raise general prices, we cannot say in what degree any specific addition to the money supply will raise prices. A doubling of the money supply of the world might conceivably double prices. In all probability, however, prices would be increased by less or by more than one hundred per cent. For the readjustments consequent upon such an extraordinary expansion in the volume of money would probably result in vital changes in the volume and character of business, the nature of which it would be impossible to predict. The student is cautioned against the view that an increase in the money supply, brought about in any way that is known to practical experience, can leave the industrial mechanism unchanged while changing the scale of prices.

We may also say that, other things equal, all prices will be raised by any important increase in the volume of money. But we cannot say that all prices will rise in the same proportion. Indeed, this is something that a little reflection on business conditions shows to be impossible. The supply of some commodities is easily increased, while the supply of other commodities can be increased only after the lapse of a considerable time. If the new money is spent largely on commodities of the first class, the attendant rise in price is quickly counteracted, in some degree, by increase of production. If it is spent on commodities of the second class, there can for a time be no such counteracting influence.

The fact that not all prices rise in the same degree, and the fact that some classes of business relations are not directly affected by price changes, render the question of increase or decrease in the volume of money of vital practical importance. It lies in the power of government, within certain

limits, to expand or contract the money supply, and therefore to change the price level. In order to form an intelligent opinion of proposed plans for changing the volume of money through governmental action, we must consider what social classes are affected favorably or adversely by such changes.

When general prices are rising, the wages of labor will also tend to rise. But it may take some time after prices have begun to rise before enterprisers decide to extend their business operations. The demand for labor, accordingly, does not for a time increase and wages remain unchanged. The laborer receives no higher wages per week or month; the commodities he buys with his wages have risen in price. It follows that the command of the laborer over the necessities and comforts of life is for the time diminished. Eventually, to be sure, enterprisers will endeavor to enlarge their businesses, and wages will rise. But if the prices of commodities continue to rise, it may well be that for a long period of time the rise in money wages will not be an adequate offset for the increased expense of living. It is a well-known fact that during the Civil War the prices of commodities rose far more than the price of labor.

For many services compensation is fixed by law or by custom. The salaries of public officials remain fixed through long periods of time notwithstanding changes in the price level. The postal employee receiving \$2,000 a year is seriously injured if prices of commodities rise, since years may elapse before the Government grants him an increase of salary. Physicians' fees, in most cases, are regulated by custom and can seldom be increased on account of an advance in general prices.

The business relations most seriously disturbed by price changes, however, are those of creditor and debtor. Let us suppose that a farmer has borrowed \$10,000, agreeing to pay off the loan in ten years, together with annual interest at six per cent. After the contract has been made, general prices, we will assume, rise twenty per cent. The farmer

does not have to pay more than \$600 interest each year, although the purchasing power of that sum has declined twenty per cent. At the end of the ten years, he will not need to pay more than \$10,000, although this sum, for the same reason, represents a lower value. The creditor has been injured through the change in the price level just as much as he would have been if the debt had been arbitrarily scaled down to \$8,000, prices remaining unchanged. The farmer, on the other hand, has gained materially. He receives higher prices for what he has to sell, and so is enabled to pay the annual interest and the principal when due with much less sacrifice than would otherwise have been necessary.

Enterprisers as a class are benefited through a rise in general prices. What they have to sell commands a higher price; their costs of production increase, but not proportionately. Mention has already been made of the fact that wages may not rise so rapidly as prices. Furthermore, most enterprisers have some charges to meet that remain unchanged from year to year. If they occupy buildings and land not owned by themselves, these are probably held under long time leases. Until it is necessary to renew such leases, the rental cannot be adjusted to the change in the price level. Most enterprisers are heavily in debt, and the rise in the level of prices has the effect of reducing the burden of such debts, as in the case of the farmer of our illustration. A period of rising prices, to the active business man, is, therefore, a period of prosperity, whether it is a period of prosperity to the people as a whole or not.

We have only to reverse our argument to show that in a period of falling prices, or rising value of money, the wage earners as a class gain, because wages do not fall as rapidly as prices; those receiving salaries fixed by law or custom gain yet more, because a readjustment of such incomes to the new scale of prices is long delayed; creditors gain through increase in the purchasing power of the interest and principal due them. The enterprisers as a class find profits

succeeded by losses, and complain bitterly of business depression.

The value of money can neither rise nor fall without inflicting unmerited hardship upon some members of society. Any change in the value of money, therefore, is an evil. The evils of a rise in the value of money are, however, more easily perceived than the evils resulting from a fall in the value of money. When money rises in value—or, what amounts to the same thing, prices fall—enterprisers incur losses, and restrict their operations, reducing their working force as far as possible. Many debtors find themselves unable to sustain their burdens, and become bankrupt. The hardships of unemployment and bankruptcy quickly attract public attention. The hardships arising from a fall in the value of money, or rising prices, are more widely diffused and less patent to the eye of the observer. Wage earners and the recipients of fixed incomes, whether from labor or from loaned capital, encounter greater and greater difficulty in making ends meet, but this fact receives little attention at a time when enterprisers great and small are enjoying prosperity. Accordingly it is quite natural that when prices are falling men should endeavor to mend matters through the action of government, while the evil effects of a general rise in prices are usually left to mend themselves.

It has already been indicated that money in its earliest form was not the creation of government, but the result of the natural evolution of trade. Governments early assumed the function of supervising the coinage of money, and this greatly facilitated the development of trade through the introduction of uniformity in quality and weight of coins.

Although governments monopolize the manufacture of coined money, they do not thereby determine the value of the money. Coinage originally was simply an authoritative certification of the weight and fineness of a bit of metal. The value of the coin depended upon laws of trade quite independent of the action of the government,

In most modern nations the coinage of gold is nothing but this governmental certification of weight and fineness. Any owner of the metal may take it to the mints and have it coined, either freely, or upon payment of a small charge to cover the cost of coinage. The supply of gold coin, then, is in no way determined by government. It increases or declines with changes in the production of gold, and in the demand for it for use in the arts. This was formerly the case with silver coin also. Any owner of silver could take it to the mints and have it transformed into coin. In the popular phrase, the coinage of silver, as of gold, was free.

If the government limited its action solely to the certification of the weight and fineness of the metal coined, and admitted gold and silver alike to free coinage, business would be hampered by the existence of two independent forms of money, each fluctuating in value according to its own laws. There would be two scales of prices, one measured in gold and the other in silver. As a consequence numerous opportunities for petty trickery would be presented to the unscrupulous.

But the government does not thus narrowly limit its action. Besides vouching for the weight and quality of metal in coins of silver and gold, it endows either all or a part of its coinage with legal tender quality. That is, certain kinds of money are declared by the government to be receivable in payment of all debts, public or private, when no particular kind of money has been specified in the contract creating the debt. This does not mean that debtor and creditor may not make private arrangements for the use of some other kind of money. If gold coin is the sole legal tender, a man may nevertheless borrow money, agreeing to repay the loan in silver. Such a contract would ordinarily be enforced by the courts. But if a man promises merely to pay \$1,000, his creditor can, if he wishes, demand payment in gold. Similarly, if a man agrees to pay a certain salary to an employee, he can be compelled to pay in gold. If on the other hand the

creditor would prefer some other form of money to gold, he cannot compel his debtor to respect his preference in the matter.

When gold and silver are freely coined and are equally endowed with the legal tender quality, it may happen that a dollar of the one metal is inferior in value to a dollar of the other. Suppose that the pure metal contained in a gold dollar is one-sixteenth in weight of the pure metal in a silver dollar—approximately the ratio formerly employed in the United States. The market value of uncoined gold, however, might be more than sixteen times as great, per unit of weight, as that of uncoined silver. If both gold and silver coins remained in circulation, it would be possible for a man to make a profit by purchasing uncoined silver, turning it into coin at the mints, and exchanging the silver coins thus obtained for gold coins. Silver would be brought from all the quarters of the world, coined, and exchanged for gold coins, and the gold coins would be exported in payment for it. Thus gold coin would tend to disappear from the circulation altogether.

If on the other hand uncoined gold was worth less than sixteen times its weight in silver, the latter metal would be withdrawn from the circulation. In the history of the United States the tendency for the cheaper money, whether silver or gold, to displace the dearer money, was constantly manifesting itself, until the policy of the free coinage of silver was abandoned in 1873. All other countries that have attempted to coin both metals freely have had a similar experience. As a consequence all the more advanced commercial nations have ceased to coin silver freely. Only enough silver is now coined to meet the needs of petty trade, and provision is made, in a manner to be described later, to maintain such coins at a parity with gold.

Let us suppose that a country like the United States should abandon the present plan of coining only gold freely, and admit to free coinage both silver and gold, at the fixed

ratio of sixteen to one, as was proposed in 1896 by one of the great political parties. What would be the effect upon the American coinage? The market value of silver has fallen so low that an ounce of silver is worth less than one-twenty-fifth of the value of an ounce of gold. Consequently it would be very profitable to buy up uncoined silver, both in America and in other countries, present it at the mints, and exchange the coined silver for gold, so long as any gold coins remained in circulation. It would obviously be only a very short time before gold disappeared entirely from the circulation.

The great demand upon the silver supply that would thus be occasioned would no doubt increase the value of that metal. The gold displaced from the American coinage would be thrown upon the markets of other countries, and would reduce the value of gold there. Nevertheless, an ounce of gold would probably continue to command more than sixteen ounces of silver—perhaps twenty ounces. A dollar (silver) would then be worth less, in gold, than a dollar (gold) was worth before the opening of the mints to silver. It would be worth still less relatively to commodities. That is, general prices in the United States would have been forced to a higher level.

If all the countries of the world had agreed to coin silver and gold freely at the same ratio, it is quite probable that coins of both metals would have continued to circulate side by side. The chief reason why gold would leave the circulation of a single country, if placed at an unfavorable ratio with silver, is that in other countries it is given a higher coinage value. More gold would be used in the arts, perhaps, but much of it would remain in the coinage if all countries undervalued it equally, relatively to silver.

The effect of such a universal adoption of bimetallism would be to increase the world's supply of money, and hence to raise prices. Now in the early nineties of the last century, it came to be generally known that prices were falling, and had been falling for a quarter of a century. The move-

ment in favor of bimetallism, or the free coinage of both silver and gold at a fixed ratio, was an effort, probably mistaken, to remedy the defects of an appreciating currency. Since that time the production of gold has greatly increased, and prices have been steadily rising.

The money supply of a country may be increased through the issue of paper money by the government. Such money usually takes the form of notes, issued in behalf of the government and alleged to be payable at the treasury on demand. But a government is sovereign, and cannot be compelled to meet its promises unless it chooses to do so. Hence the person who receives such a note usually takes it with the intention of parting with it in the purchase of goods or in the payment of debts, not of presenting it at the treasury for specie.

In order to give such notes currency, the government endows them with the legal tender quality. If the volume of paper money is narrowly limited, it may circulate at par. Most of us have taxes to pay, and paper money is accepted at par in payment of taxes. Many of us have debts to pay, and the law makes paper as good as gold for that purpose. If occasionally we receive paper money in exchange, we know that we can use it in one of these ways. So certain of this may we be, under the conditions, and so confident that others are in a like position, that we do not hesitate in accepting paper money at par in exchange for our goods and services.

If, however, an enormous amount of paper money is issued by the government, so that we are all likely to receive more of it in exchange than we can certainly use at par, we begin to look upon it with suspicion. We exchange it, if we can, for "hard money"—gold or silver; if possible, we stipulate that we shall be paid in hard money for our commodities or services, offering our goods, if necessary, at lower prices than we would accept if paid in paper. Relatively to gold, paper depreciates. If there is enough of it issued, no one pays gold if he can avoid it, but uses paper instead.

Thus the gold disappears from circulation, and paper becomes the only money in use. Under the circumstances it is the worst possible kind of money: it fluctuates wildly in value, falling with rumors of additional issues, rising when it is rumored that the government intends to redeem it. At every change in its value some men gain unmerited profits and others suffer unmerited losses.

If then a government exercises great moderation in the issue of paper money, depreciation may not occur. The increase in money will tend to raise prices, but not perceptibly; and if prices are tending downward this effect may be beneficial. Why then do practically all students of monetary science agree that paper money is always an unmitigated evil? Because governments almost never exercise moderation in the issue of paper money. They resort to paper money in time of need, usually while carrying on war. Thus they obtain funds without burdening the people with taxation. As the expenses of the war increase, more and more paper money is issued, until hard money is driven out of circulation, and the redundant paper currency falls lower and lower in value, as evidenced by constantly rising prices.

In a well regulated monetary system, such as almost all the advanced nations now fortunately enjoy, all forms of money are maintained at a parity by the government. In the monetary system of the United States, for example, are to be found coins of gold, silver, nickel and bronze, as well as paper money. Part of the paper money consists of gold and silver certificates; a small part of it of treasury notes, issued in payment for silver bullion; part of it of "greenbacks"—promissory notes of the Government, a legacy of the Civil War. All these forms of money are maintained at an absolute parity by the Government. The gold certificates cannot fall below the value of gold coin, because for every dollar of such certificates there is a dollar's worth of gold coin or bullion in the United States Treasury, payable to the certificate holder on demand. The silver certificates are like-

wise secured in value by treasury holdings of silver. It is a part of the settled policy of the United States to maintain the silver dollars at a parity with gold; and although no specific provision is made by law for the exchange of silver dollars for gold at the treasury, the privilege of making such an exchange would doubtless be accorded the holder of silver dollars if the latter showed any tendency to depreciate. A reserve of \$150,000,000 in gold is held by the treasury for the purpose of redeeming any greenbacks that may be presented for redemption. Any one who desires may exchange the lesser silver, nickel and copper coins for gold by presenting them in suitable quantities at the treasury.

CHAPTER XVI

FINANCIAL INSTITUTIONS: THE BANK

In a complex industrial society it is natural that there should be some men possessing capital who are unable or unwilling to employ it under their own management in business undertakings. Some men, while able to use part of their capital in the conduct of businesses under their own control, are unable to use all of it advantageously. And some men, while able to use all their capital part of the time, fail to find use for it during some weeks or months of the year. On the other hand there are men who have not enough capital of their own for the proper exploitation of the opportunities for its employment which they command. Some men, while having capital enough during the greater part of the year, require an additional amount during certain seasons.

Accordingly one of the functions of the modern industrial organization is the transfer of capital from those who have a superfluity of it to those who can use it profitably. This function, which in view of the enormous amount of capital to be thus transferred is one of vast importance, may be designated by the term "finance." Institutions designed primarily to effect the transfer, or "placing," of capital are known as financial institutions. It is to be noted that we are here using the word "finance" in a sense in some respects more restricted, in some respects broader, than is usually conveyed by the term. But we are justified in this by the analogies of such words as "capital," "rent," "labor," etc., which have one meaning in economics and a slightly different meaning in popular language.

The typical financial transaction, or transfer of capital, takes the form of a loan. A loan of capital may be effected

by personal arrangement between lender and borrower, just as a sale may be effected by personal arrangement between producer and consumer. But just as the complexity of the conditions of the supply of and demand for commodities has rendered necessary the creation of a special commercial class and an elaborate commercial organization, as an intermediary between producer and consumer, so the conditions of the supply of and demand for capital have given rise to a financial class, with highly developed financial institutions, as an intermediary between the man who has capital to lend and the man who desires to borrow it—or between the capitalist proper and the enterpriser. Of these financial institutions the bank is the most important. The placing of capital is indeed not the only function of the bank; but it is its most important one, all other functions of the bank having grown up as accessories to the placing of capital.

In its simplest form a loan is a transfer of a sum of money from one person to another, with the stipulation that at some future time, usually specified, an equivalent sum of money shall be repaid. The borrower naturally transforms the money thus obtained into goods at the earliest possible moment. If the goods purchased are designed for further production, the loan is virtually the transfer of capital. Such a loan is called a productive loan. If the money is spent for commodities for consumption, the loan is called a consumer's loan. The productive loan is by far the more common, and we shall concern ourselves chiefly with it.

It is of course obvious that loans, whether productive or consumer's, will be made only to persons who have "credit," that is, to persons who are regarded as sufficiently honorable and efficient to be willing and able to repay the sums loaned when they fall due. A man's credit may rest upon his reputation for personal integrity and business capacity; more commonly it rests in part at least upon the fact that he has property which, under the law, can be seized by his creditors in case of default in payment of his debts.

The agreement between creditor and debtor as to time of repayment, rate of interest, etc., may be merely verbal, as is said often to be the case in China, where the standards of business honor are extraordinarily high. In most modern states, such agreements are usually written, the borrower giving the creditor a promissory note, or written promise to pay a given sum at a specified date, with or without interest, as the case may be. Such notes are one form of "credit instruments." If law or custom permits the creditor to transfer his claim upon the debtor to another person, the note is a "negotiable credit instrument," or "negotiable paper."

The agreement between creditor and debtor may consist in the mere promise of the latter to pay, in which case the creditor relies for security upon the general effects which the debtor may possess at the time when the debt falls due. The borrower may, however, give more definite security to the lender by giving the latter a special claim upon some specific possession of the borrower, as a parcel of real estate. A note thus secured is popularly known as a "mortgage." The property given in pledge may not be alienated without the consent of the creditor until the debt has been extinguished.

Very frequently loans are disguised in the form of sales "on credit." The seller, instead of demanding spot cash for his wares, may agree to wait for a certain period of time—say, three months—before demanding payment. In this case the seller really lends the buyer a sum equal to the price of the goods. A company engaged in the manufacture of agricultural implements sells a self-binder to a farmer. The latter has not the ready cash to pay for it, but expects to have the necessary sum four months later, when he sells his crops. He may borrow the money from a neighbor, giving his note, payable in four months, with interest. Or, instead of borrowing the money and paying cash for the machine, the farmer may buy it "on time," agreeing to pay for it at the end of four months. In this case we sometimes say that the

farmer has purchased the machine with his credit. If we analyze the transaction into its elements, we shall see that this expression is inaccurate. The company has not merely sold the machine; it has also, in effect, loaned the farmer the money with which to pay for it. Every sale "on time" or "on credit" is a double transaction, involving a sale, in the proper sense of the word, and a loan of the capital represented by the goods sold. It makes no difference whether or not the person who lends the capital is the same person who sells the goods.

But the objection may be raised that the man who buys goods on time does not always agree to pay interest on the capital of which he has gained command through the purchase. This, however, is only apparently so. There is always a difference between the credit price of goods and the cash price. This difference may be disguised under one form or another—as a discount, rebate, or what not—but it is always present. It represents interest, often at a very high rate, on the loan involved in the credit sale.

We see then that a loan is involved in every credit sale; and this is the distinguishing characteristic of such sales. We may with propriety extend the meaning of credit to all transactions involving loans. A man uses his credit in the same way whether he borrows money with which to buy goods or buys goods on time. A man who does business on credit is doing business on borrowed capital, whether he goes through the form of raising loans or not.

There are some writers on economics who regard credit as a mysterious productive instrument, a form of capital, or at any rate a substitute for capital. The above illustration will show that this view has no justification. What the farmer cuts his wheat with is a capital good, embodying capital furnished either by his neighbor or by the agricultural implement company. This capital existed before the farmer gained possession of it, and would doubtless have been employed productively if the farmer had not decided

to buy a machine. The fact that he buys the machine with borrowed capital shows that he believes that he can make this capital yield more than the interest which he must pay for its use. His "credit" enables him to procure capital to use in an employment which he believes to be superior to the average in productivity. If he is right in his opinion, he is able to keep for himself a part of the product of this capital, as a profit. But the profit is not produced by his credit, any more than the wheat is cut by it. The profit is produced by the capital.

Capital loans display wide variation in the length of time for which the lender loses control of his capital. Sometimes the lender retains the right of calling for his capital at any time he desires; sometimes the date when the debt falls due is fixed at thirty, sixty, or ninety days; sometimes at five, ten, fifty years. This variation in the life period of loans is a reflection of the economic situation of the various classes of lenders and borrowers.

At any given time there are men who have more capital than they need immediately; they cannot tell, however, how soon they may need all they have. On the other hand there are men who can use capital profitably for an indefinite period of time, who can yet return it to its owner whenever it is demanded. Thus a man who deals in stocks and bonds may find exceedingly profitable employment for capital in the purchase of such securities when prices are rising. If he is operating with borrowed capital, he can sell the securities at any time when payment is demanded, and so restore the capital to its owner.

Again, there are men who can safely part with the control of their capital for a definite period of time—say, from one to six months. Corresponding with this class of lenders is a class of borrowers who cannot agree to pay off a loan on demand, but who are able to make arrangements for payment at a definite date some weeks or months after borrowing the capital. The merchant may serve as a type of this class.

He may safely purchase a line of goods with the proceeds of a three months' loan, feeling quite sure that within the three months he will be able to sell the goods and so gain possession of the means of repayment.

Finally, there is a class of lenders who have no desire for the early repayment of their capital. With satisfactory arrangement made as to the rate of interest to be paid, they may be willing to transfer control of their capital for a period of ten, twenty or fifty years. There is a corresponding class of borrowers, who desire capital for investment in land, buildings, and permanent equipment, and who would be greatly embarrassed by the necessity of early payment.

There are, then, three distinguishable sources of supply of loanable capital, and three corresponding sources of demand for it. In practical life, of course, with highly developed financial institutions, there is a certain degree of interchangeability in the different funds of capital. Let us suppose that lenders of the first class make over their capital to a bank, reserving the right of withdrawing it at any time. Experience will show that while some lenders may withdraw their capital each day, new lenders will each day offer capital at the bank. Thus the bank has a permanent fund of capital which it may lend to business men for stated periods of time. Men who wish to lend their capital for long periods of time may place it with a bank, which may use it in short time loans, experience showing that when one business man repays a loan of this kind another will be ready to borrow the capital.

The bank proper is chiefly engaged in providing business men with demand and short term loans. The capital employed in this way is in part the bank's own, and is permanently devoted to the purpose. By far the greater part of the capital, however, is supplied by other persons, who loan their surplus funds to the bank, receiving for the service either interest or some other form of compensation. Provision for long term loans is usually made by various other

financial institutions, such as the savings bank, the insurance company, the investment company, and the exchanges. These institutions will receive attention in the next chapter. Our present concern is the economic nature of the transactions in which the bank proper is engaged.

Let us suppose that in a town of considerable size, not formerly enjoying banking facilities, a company is formed to establish a bank. An initial capital of \$100,000 is subscribed. This capital consists, in the first instance, of cash. A part of the sum—say, \$10,000—is spent in erecting and equipping a building; the remaining \$90,000 is placed in the vaults, to be loaned to business men who can give proper evidence of their ability to meet their obligations when due.

As the bank has doubtless better means for keeping money safe than any other institution in the town, we may suppose that many persons will be glad to deposit with it any money which they do not immediately need, reserving the privilege of withdrawing it whenever they need it. On pay days salaried employees will deposit most of their month's earnings, expecting to withdraw the money day by day to meet their current expenses. Similarly capitalists will deposit their annual or semi-annual interest receipts, to be withdrawn in like manner for current expenditures. Merchants will deposit surplus cash which they will not need to reinvest in stock for some days or weeks. Lenders whose loans have been repaid will deposit the money until they find another satisfactory opportunity for lending. Thus a great part of the community will use the bank in greater or less degree for the storing of surplus funds. The sums so deposited are credited to the depositors on the books of the bank.

The use of checks, or written orders for the transfer of funds, greatly increases the usefulness of the bank as a repository of funds of this kind. The depositor, instead of going in person to the bank to withdraw money for a purchase, may give the seller a check for the sum involved in

the transaction. The recipient of the check may present it at the bank for payment, carrying away the sum in money. If he is in the habit of depositing his own surplus funds in the bank, he is more likely to deposit the check, instead of cashing it. The sum called for in the check is then transferred, on the books of the bank, from the account of the one person to the account of the other. Thus payment is effected without the handling of money by any one. When the check system is well developed funds deposited with the bank may change owners scores of times without ever leaving the vaults.

The aggregate of cash entrusted to the bank may amount to a very considerable sum. At one time such deposits may aggregate \$50,000, at another time \$75,000. Experience may show that the volume of deposits never falls below \$40,000. This sum of \$40,000 may be regarded as a perpetual fund entrusted to the bank by the body of depositors, although actual ownership of each part of it is continually changing.

The bank is, of course, under no obligation to keep in its vaults the money that has thus been entrusted to it. All that the bank is required to do is to hold itself in readiness to pay the money on demand. So long as it does this, it may use the deposits in any way that it may find profitable—observing, of course, such restrictions in the use of its funds as the law prescribes. And this fact indicates the economic nature of such deposits. They are loans, payable on demand, the depositor being the creditor, the bank the debtor.

Up to the present point we have been concerned with the bank as a borrower of capital. We have now to consider its position as a lender of capital. Let us suppose that one of the inhabitants of the town is a manufacturer of hardware, who sells his products "on time" to jobbers. This manufacturer has sold, let us say, \$10,000 worth of products, receiving in lieu of payment notes for \$10,000 at three months time. This means, as we have already seen, that the manu-

facturer has made a disguised loan of capital to the jobbers. The manufacturer, however, needs his capital in order to continue his business of manufacture.

He may, if his credit is good, borrow \$10,000 from the bank, agreeing to repay the loan in three months. In this case he is at the same time a lender of capital and a borrower of capital. The capital which he has loaned finds tangible form in goods in the possession of the jobbers. The capital which he has borrowed finds tangible form first in \$10,000 cash, then in the capital goods for which he exchanges the money.

Instead of borrowing directly, he may sell to the bank the notes which he has received from the jobbers. When he has done this he is neither creditor nor debtor. The bank has become the creditor of the jobbers; its \$10,000 of capital is no longer embodied in the goods which the manufacturer purchases with the money received from the bank, but in the goods in the hands of the jobbers. It is as if the manufacturer had sold his wares to the bank, which in turn had sold them on time to the jobbers.

For simplicity we have taken no account of interest. If the jobbers' notes bear no interest, the bank will not buy them for \$10,000. It will deduct from the face value of the notes a sum representing interest for ninety days. This practice of deducting interest in advance is known as "discounting." A loan effected through the purchase of a note thus discounted is known as a "discount." If the manufacturer offers his own note instead of the notes of the jobbers, it is of course discounted in the same way.

At first sight it may appear that the manufacturer has suffered a loss by the transaction. The notes of the jobbers, representing purchases of \$10,000, discounted at six per cent., net the manufacturer only \$9,850. His own note, on which he would have to pay \$10,000 on maturity, would net him an equal sum. We may be sure, however, that he charged the jobbers at least \$150 more for his goods than he

would have charged if they had been ready to pay spot cash. The jobbers, again, would not have submitted to the extra charge if they had not believed that the capital thus placed at their command would yield at least \$150 in the three months. Or if the manufacturer obtains \$9,850 from the bank on his own note, we may be sure that he expects that the capital in which he invests the money will earn at least \$150 in the three months. The "discount" which represents the gains of the bank is the product of its capital, either in the hands of the jobbers or in the hands of the manufacturer.

Let us now suppose that the bank has loaned all its own cash in the way described. Will its operations cease for the time? Not at all. For it has, we have assumed, a considerable volume of cash deposits—other people's capital, entrusted to it for safe keeping. On some days more of this cash may be withdrawn than is deposited, but experience may show that the excess of withdrawals never is more than twenty-five per cent. of the aggregate deposits. Why should not the bank lend the other seventy-five per cent., and thus get a profit out of it? This in fact it would do. A manufacturer, let us say, sells to the bank, or "discounts," jobbers' notes for \$10,000. The bank buys the notes with its depositors' money. Clearly enough, the capital at work in the business of the jobbers is, from an economic point of view, the capital of the depositors. The interest which the jobbers pay is, however, retained by the bank as a recompense for the trouble involved in keeping the funds of its depositors safe, and in effecting transfers of such accounts upon its books.

The bank may find the business of lending the money of depositors so profitable that it will offer interest on deposits left with it for definite periods of time. It will of course pay a lower rate than it receives. In this case the earnings of the depositors' capital are divided between the bank and the depositors.

When a manufacturer gets a note discounted at the

bank he may, if he chooses, carry away with him the cash represented by the discounted value of the note. This, however, he is not likely to do. What he wants the money for is to make purchases of materials, to pay salaries and wages, and to meet other business expenses. The most convenient method of payment is by checks drawn on the bank. So instead of carrying the money away from the bank he is likely to leave it as a deposit, subject to withdrawal on demand. Of course there is no reason why the bank should go through the form of counting out the cash to the manufacturer if it is to be redeposited in this way. What it will do is to credit the manufacturer with the discounted value of the notes which he has transferred to it. It is easy to see that business men who transfer notes to the bank, whether their own or the notes of their debtors, will as a rule be satisfied if the bank will credit them with deposits represented by the discounted value of the notes transferred. It is in this way, not by the actual deposit of cash, that the greater part of the deposits of modern banks originates.

We must now endeavor to disentangle the complicated relations of debtor and creditor involved in a deposit created in this way. The questions we must answer are these: Where is the actual capital which is producing the interest that the bank receives; and who is, economically speaking, the ultimate lender of the capital? When the manufacturer sells to the bank jobbers' notes, the actual capital is invested in goods in the jobbers' possession. If the manufacturer redeposits the sum which the bank pays for the notes, he remains, for the time being, the ultimate lender of capital to the jobbers. He does indeed make over the interest to the bank, in return for the latter's guarantee that he may have his capital when he wishes it. In this respect his position is identical with that of the cash depositor, who permits the bank to enjoy the fruits of his capital on condition that he may withdraw it at will.

Now let us follow, in imagination, the history of the

manufacturer's deposit. After a few days he may draw checks aggregating \$1,000 in payment of salaries. These are deposited in the bank by his employees. The employees then become to the extent of \$1,000 the ultimate lenders of capital to the jobbers, the bank still keeping the interest paid by the latter. The employees may draw checks on the bank payable to their landlords; the latter then succeed to the place of lenders. And so the claim upon the jobbers may be passed from hand to hand for months. In the end, to be sure, some one may demand cash payment from the bank; the latter then assumes the rôle of ultimate lender, if it is compelled to draw upon its own cash. Very likely, however, the jobbers' notes have fallen due and the debts have been paid in cash, before the bank is called upon to assume the rôle of lender of its own funds.

If the manufacturer sells to the bank his own note, and leaves the proceeds of the sale as a deposit, he is at once debtor to the bank for the value of the note and creditor of the bank for nearly the same sum. The bank's own capital plays no part in the transaction: the manufacturer is virtually his own creditor and his own debtor. No loan has really been made by the bank until the deposit is drawn upon. When the manufacturer draws on the deposit to buy materials the loan becomes a true transfer of capital, or economic loan. If the checks drawn by the manufacturer are deposited with the bank by the seller of materials, the latter becomes the ultimate creditor of the manufacturer. If the checks are cashed, the bank assumes this rôle, unless indeed it uses cash deposits for the purpose.

In the foregoing discussion it has been assumed that the transfer of claims upon the bank is made through checks, drawn upon a deposit, and redeposited by the holder. A man who receives a check may, however, transfer it, properly endorsed, to another man, who in turn may transfer the check to a third person. Each holder of the check becomes in turn the creditor of the bank, and through the bank the

creditor of some business man who is using capital borrowed from the bank. When the check is at last deposited with the bank, the claim upon the bank is formally transferred on its books. But it is obvious that the claim on the bank is just as certainly transferred whenever the check changes hands.

Let us now suppose that the bank, instead of crediting the manufacturer with the discounted value of his note, gives him a parcel of its own promissory notes, representing the bank's promise to pay cash to the holder on demand. The manufacturer is then debtor to the bank for the amount stated in his note; he is the creditor of the bank for the amounts stated in the bank notes in his possession. As soon as he uses the notes for the purchase of supplies, etc., he transfers the claim upon the bank to the seller of the supplies. Such notes might pass from hand to hand for years, each successive holder of a note becoming the creditor of the bank, and through the bank, the ultimate creditor of some business man.

Obviously it makes little difference to the bank whether the manufacturer in our example is credited with a deposit on the books of the bank in payment for his note or takes the bank's notes in the same sum. The deposit represents a right to cash on demand; the bank notes represent exactly the same thing. The deposit may pass from owner to owner through checks drawn upon it and redeposited with the bank; the note passes from owner to owner without the formality of a transfer on the books of the bank. Any one of the series of owners of the deposit may demand cash at any time; the same is true of any one of the series of holders of a bank note. For some classes of transactions, it is true, a deposit subject to check is the more convenient means of payment, while for other classes of transactions bank notes are the more convenient.

It is often said that a bank loans not only its capital, but its credit also. If the student has followed the fore-

going analysis, he has seen that what the bank really lends is capital, and nothing but capital, either its own or that of other persons. Because its credit is good, men entrust it with their surplus funds, which it uses so as to gain a profit, by placing them at interest in the hands of business men.

We assumed that the bank begins business with a capital of \$100,000, of which \$90,000 consists of cash; further, that the surplus cash of the inhabitants of the town, amounting to at least \$40,000, is deposited with the bank. Let us suppose that the bank lends \$100,000, or, to use another form of expression, invests \$100,000 in the notes of business men. These men, we have seen, will not care to take the cash from the bank's vaults, preferring to leave it on deposit. As these depositors draw upon the bank in the course of their business, some cash is withdrawn; for the most part, however, the checks are redeposited. So the bank will continue to hold almost as much cash after making its loans as it had at first. Why should it not lend another \$100,000, and another, and another? To do so will only slightly reduce the amount of cash held by the bank, as the borrowers will for the most part be content with deposits credited to their accounts. The deposits thus created may amount to \$350,000; the original cash deposits, \$50,000. Against this volume of deposits the bank may have only a little over \$100,000 in cash.

This would mean that the bank has borrowed \$400,000, any part of which sum it must hold itself in readiness to pay on demand, although it has only \$100,000 in cash. What if all its depositors should suddenly demand payment? The bank would have to suspend payment, of course. But as a matter of fact there is very little danger that the depositors will all demand payment at once. As long as the credit of the bank is good, its depositors will draw from it only so much cash as they may need for minor business transactions; and this cash for the most part finds its way into the hands of merchants, who redeposit it in the bank.

Larger transactions are effected by means of checks, and these, we have seen, are as a rule redeposited. If the bank keeps in its reserves cash amounting to one-quarter or one-fifth of its demand obligations, it will under ordinary circumstances be in a position to meet promptly all demands upon it. How great the proportion of cash reserves to demand obligations must be, experience alone can tell. Each bank, within the limits of the law, must determine for itself how great a reserve it needs.

Remote as is the chance that all the depositors, or any great part of them, will simultaneously present their claims upon the bank, there is always a possibility that the demands upon the bank may at any time reduce the cash reserve below the point of safety. If the credit of the bank is not impaired, it can usually replenish its reserve simply through refraining from making further loans. We must remember that the bank holds business men's notes exceeding in face value its volume of deposits. These notes attain maturity at different dates, but none of them, we may suppose, runs for a period of over three months. If then the bank collects when due the sums which it has loaned to business men, it will gradually restore its cash reserve, or at any rate reduce the volume of its outstanding obligations. In three months' time it will be able to pay all its depositors in full, without suffering any serious embarrassment.

There are, however, circumstances under which the volume of demands upon the bank for cash is too great to be met in this way. It may be that a rumor has gone abroad that the failure of the bank is imminent, resulting in a "run" on the bank, a large number of depositors demanding their funds at once. If there are in the vicinity other banks the credit of which is unshaken, these may be willing to buy of the embarrassed institution some of the notes which it holds, and thus provide it with the cash it needs.

It is obvious that the solvency of the bank depends upon the ability of its debtors to meet their obligations when due.

If the notes which it holds are worthless, it cannot pay its depositors at all. If the notes cannot be paid at the time agreed upon, the bank may have to suspend payment for a considerable period of time, and this would seriously impair its credit and so destroy its business. Sound banking requires that the utmost care be exercised in the making of loans. The business standing of each man who desires a loan is closely scrutinized. Loans are limited to short periods of time, so that in case of need the bank's funds may not be long out of its control. Banks do sometimes fail to pay their creditors, through fraud or mismanagement. But this is a comparatively rare occurrence.

While the funds of a bank may be invested almost exclusively in short time notes, this is not necessarily the case. Any kind of property that finds a ready sale and that is not subject to marked fluctuations of value may serve as a banking investment. If the bank has funds invested in such property, it can recover them, through sale, whenever it finds this necessary. Tangible property does not answer the purpose, since such property fluctuates widely in value, and is often unsalable for a considerable period of time. The stocks of a great corporation can always find a market, but their value is subject to wide fluctuations. Corporation bonds are more stable in value, but not as a rule sufficiently stable for the purpose of bank investment. Government bonds, on the other hand, fluctuate in value only slightly, and always find a ready market. Accordingly it is quite as safe for the bank to invest in such bonds as in short term notes. But government bonds yield a very low rate of interest; hence a bank is not likely to invest heavily in them, unless there is some special inducement offered to the banks to do so.

Let us now assume that, instead of one bank in the town, there are several, which we may designate as A, B, C, etc. Some of the citizens of the town will deposit their funds with bank A, some with B, some with C. Often a man will

use his check, drawn on bank A, in making a payment to a man who keeps his deposit with bank B or C. The recipient of the check might of course take the check to bank A, obtain cash for it, and deposit the money with his own bank. It is more convenient, however, for him to transfer the check, by endorsement, to his own bank. The bank then credits him with the sum represented by the check, and assumes the trouble of collecting the sum from bank A. And so every day, we may suppose, checks drawn on bank A are deposited with banks B and C; checks drawn on these banks are deposited with bank A. At the end of each business day a clerk in the employ of bank A takes the checks drawn on B and C and presents them for payment at those banks. Similarly a clerk from bank B presents for payment checks deposited with that bank, drawn upon A and C. The student can easily see that such a method of settlement involves some waste of energy. While a clerk of bank A is presenting for payment at bank B checks drawn upon that bank, a clerk of bank B is presenting for payment at bank A checks drawn upon the latter bank. Money is being carried from A to B at the same time that money is carried from B to A. Obviously some method of balancing can be devised which will save the unnecessary labor and risk of thus carrying money to and fro. Especially would this be necessary in a large city, where there are scores of banks.

In every important banking center the banks form an association which provides a building or a hall known as a clearing house, where representatives of the several banks meet daily for the settlement of the claims of each bank upon the other banks. The claims of each bank upon all the others are set off against the claims of all the other banks upon it. When this has been done, it will be found that some of the banks have a balance in their favor, while others have a deficit to make good. Each debtor bank then pays a single lump sum, representing its indebtedness to all the

associated banks; each creditor bank receives a lump sum representing the balance of its claims upon all the banks. By this method the transfer of cash from bank to bank is reduced to the lowest terms.

Sometimes, of course, checks or drafts drawn on banks in other cities will be deposited with a bank. It is obvious that arrangements for the handling of payments between banks in different cities analogous with the arrangements just described for payments between banks in the same city may be made. These we shall consider in a later chapter.

An illustration was given in the last chapter of the way in which a promissory note might serve as a substitute for money in effecting exchanges. It is easy to see how bank deposits and bank notes may serve as excellent substitutes for actual money. A deposit, we have seen, is not a definite sum of actual money, kept safe in the vaults of a bank. It is a right to demand money at the bank. When a man pays for goods by means of a check drawn on such a deposit, he simply transfers his claim upon the bank. Such a claim may be transferred again and again, effecting scores of exchanges. A bank note, as we have seen, is a claim upon the bank differing only in form from a deposit. It, too, may pass from hand to hand, effecting exchanges. Much the greater proportion of the total volume of exchanges in a country like the United States is effected through the transfer of bank deposits and notes.

The banking system of a country plays obviously an exceedingly important part in its economic life. It not only serves the important purpose of collecting capital from men who do not need it and of placing it in the hands of men who can use it productively, but it also furnishes what is now the more important element in the medium of exchange. Almost every business man has daily occasion to use the services of banks. Indeed, it is difficult to imagine how business on a modern scale could be conducted without the aid of a banking system.

A banking system, however, cannot be conducted without certain risks, both to the banker and to the public. The greater the aggregate of loans a bank can make, the greater the profit to the bank. But after lending its own capital, every increase in volume of loans is of course attended by a corresponding increase in volume of deposits—obligations which the bank must meet on demand. If the volume of deposits becomes too great, there is danger that the bank will not be able to meet its obligations of payment on demand. When this happens, the credit of the bank is severely shaken, and its depositors are seriously inconvenienced, at the very least. Moreover, a banker who is eager to expand his volume of loans is not likely to scrutinize the character of security so carefully as he should. Thus he may be led to lend the bank's capital, and other people's capital as well, to men who will be unable to repay the loans. As a result the bank may fail and the depositors also be involved in ruin.

It is accordingly natural that governments should make various regulations designed to insure the stability of the banking system. Such regulations usually prescribe the minimum cash reserve which must be held against outstanding demand liabilities. Thus some of the States require banks chartered in those States to maintain a cash reserve equal to fifteen per cent. of all deposits. The United States requires all banks chartered under federal laws—national banks—to maintain cash reserves equal to a certain proportion of their demand liabilities—deposits and notes. This proportion is fifteen per cent. in the lesser towns and cities and twenty-five per cent. in certain large cities, designated as reserve cities. But three-fifths of the reserve of banks in the lesser cities may be placed on deposit in banks in the reserve cities; one-half of the reserve of banks in ordinary reserve cities may be deposited in banks in New York, Chicago and St. Louis.

The issue of bank notes is usually carefully regulated

by government, so as to safeguard the holder of notes against loss. Now, we have seen that the positions of the note holder and the depositor are quite analogous. Both are creditors of the bank; both have a right to cash on demand. Why then should the government take greater pains to insure the note holder against loss than to insure the depositor against loss?

The depositor usually lives in the city in which the bank which holds his funds on deposit is established. He is therefore in a position to know something of the standing of the bank. If he has reason to believe that the bank is not well managed, he can at once withdraw his deposit. On the other hand, bank notes often find their way to distant cities. The holders of such notes can know nothing about the credit of the issuing bank. For this reason it is only just that their interests should be protected by the government.

Various methods are employed by the different governments to protect the note holder against loss. In some countries the volume of notes that a bank may issue is limited to a certain proportion of the capital of the bank; in case of failure the note holders have a prior claim upon all the resources of the bank; furthermore, each bank is required to contribute to a fund for the immediate payment of notes of banks that have failed. In the United States national banks alone have the privilege of issuing notes; other banks may indeed issue notes, but are taxed so heavily on all notes issued that issue is unprofitable. A national bank which avails itself of the privilege of issue must purchase, and deposit with the United States Treasury, United States bonds the par value and the market value of which is equal to the value of the notes issued. In case the bank fails, these bonds are sold and the proceeds used to redeem the notes. Thus it is quite impossible for the holder of bank notes to suffer any loss, even if the bank of issue fails.

CHAPTER XVII

OTHER FINANCIAL INSTITUTIONS

The chief function of the bank, as we have seen, is the supplying of the demand for short time loans, through the accumulation and placing of capital which is available for use for short periods of time. In the present chapter we shall study the mechanism by which the placing of capital in long time and permanent investments is effected.

In order to gain an understanding of this mechanism we must endeavor to present to ourselves a general view of the sources of the demand for and the supply of free capital for long time investments.

Throughout the country there is a constant demand for capital for the purchase and improvement of real estate. Men with small capitals of their own desire to buy farms or building lots; men who possess land desire to prepare it for cultivation or to equip it with the necessary stock or buildings. Those with insufficient capital—and they are many—enter the capital market as borrowers. They expect such capital as they may raise through loans to be highly productive; but they cannot be sure that they will be able to restore it to the lenders for several years. To meet the needs of such borrowers, lenders must surrender control of their funds for a considerable period of time—five, ten or fifteen years.

A second source of demand for capital arises from the needs of the modern large scale business enterprise. In many forms of business the capital necessary for effective operation exceeds the amount that an ordinary enterpriser owns, or can raise through personal loans. The number of million-dollar enterprises in the United States vastly exceeds the number of millionaires. Accordingly there must

be some method of transferring to a single active enterpriser the capitals accumulated by numerous individuals.

A third source of demand for capital—and the last with which we need concern ourselves—arises from the extraordinary needs of government. Under ordinary circumstances the expenditures of most governments are met by current revenues. Owing to unforeseen circumstances revenues may be less than was anticipated, while the expenditures may prove unusually heavy. As it takes time to revise a revenue system, a considerable deficit may appear, which involves borrowing under one form or another.

A much more important cause of public borrowing is the enormous expense entailed by modern warfare. No great war can be carried to a successful issue without the employment of far greater resources than any practicable system of taxation will afford. Recourse must therefore be had to loans. Government loans thus arising cannot quickly be paid off. Often loans are negotiated for ten, twenty or thirty years; and even at the expiration of the period for which they are contracted, they are frequently paid out of the proceeds of new loans. The greater part of the public debt of the United States dates from the Civil War; a large part of the debt of Great Britain had its origin in the Napoleonic wars.

Again, governments may borrow money for the purpose of carrying out a policy of permanent improvements. The United States, for example, raises the funds for the construction of the Isthmian Canal through loans. The Prussian, Russian, Indian and Australian governments borrowed vast sums for the purpose of purchasing and constructing railways. Cities are continually borrowing money for similar purposes. Especially where the policy of municipal ownership finds favor, the demand for capital for public use is enormous.

We may now consider the sources of the supply of capital for long time investment. Just as there are always men

who are entering business life, so there are always men who are retiring from active business affairs. Men of the latter class desire to obtain an income from their accumulations without the labor that personal management entails. Universities, hospitals and other institutions receive money endowments, which must be invested in such a way as to yield a steady income. Thus some part of society's permanent fund of capital is continually requiring to be reinvested. Further, the capital of society is steadily increasing through saving. Wage-earners and professional men are under the necessity of putting by a part of their incomes as a reserve against sickness and old age, or as a provision for their dependents in case of death. Capitalists who look forward to increasing burdens save some part of their interest receipts; active business men save part of their profits. Of these savings some part is reinvested in their own businesses by the men who save. A great part of the total fund of savings must, however, be placed under the control of other persons, if it is to yield a considerable income.

We have now a view of the work that the financial mechanism must perform. It must gather together the funds of free capital and place them under the control of those who can make best use of such funds. We may next proceed to a study of the methods by which this work of placing capital is performed.

The transfer of capital may assume the form of a loan, or it may assume the form of a partnership arrangement. To illustrate, let us suppose that a mine operator holds a lease of advantageously situated coal lands. To develop these lands he may need a capital of \$100,000. A retired merchant in the vicinity has, we will say, \$100,000 from which he desires to get an income without the labor of managing a business on his own account. The mine operator may borrow the \$100,000, agreeing to pay a stipulated rate of interest. On the other hand, he may be willing to form a partnership with the owner of the capital, agreeing to

share the profits in fixed proportions. In either case the capital is virtually placed under the control of the mine operator. From a legal point of view the distinction between the two methods of transfer of capital is clear. If the transfer is effected through a loan, the mine operator becomes the legal owner of the goods in which the capital is invested, subject to the claims of the lender for interest and principal. The lender has no voice in the management of the business. If the transfer of capital is effected through a partnership agreement, the capitalist becomes part owner of all the capital goods employed in the business, and is entitled to a voice in the management of it. From an economic point of view, the chief distinction is that in case of a loan transfer of capital, the capitalist receives a fixed income, not affected by the vicissitudes of the business, while in the case of the partnership transfer, the capitalist receives a share of the proceeds of the business, fluctuating with the alternation of prosperity and depression. The relation between the two methods of capital transfer will appear more clearly when we study them in their more highly developed forms—bonds and stocks.

Where economic conditions are simple, as in an agricultural district or in a small town, the placing of capital may be effected through direct arrangements between those who need capital and those who have it to spare. The character and capacity of an enterpriser is easily ascertained by those who wish to place their capital. A man who wishes to borrow capital can easily establish relations with those who have capital to lend. Even in such simple conditions, however, the individual borrower or lender is often at a disadvantage. The former may fail to meet the men who are ready to lend at the lowest interest rate; the latter may fail to find the safest and most productive investments for his capital. Hence the need for a middleman, to bring together borrower and lender, enterpriser and capitalist. As industrial conditions become more complex, the

need for the middleman becomes more intense. It would be quite impossible for the small capitalist of a city like New York or London to search out the most productive investments afforded by the business of such a city, were there no men who made it their business to bring capitalist and enterpriser together.

The men who perform this function may employ either of two methods. They may act as mere agents, in behalf of lender or of borrower or of both. Thus in some towns there are men who undertake, for a fee or "commission," to place any man who wishes to borrow in relations with men who have capital to lend. The function may, however, be performed in another way. Men with some capital of their own may hold themselves in readiness to borrow any capital that is offered for a definite period of time, trusting to the chance that they will be able to lend it again on more advantageous terms. The difference between the interest received and the interest paid represents the profits of the middleman. This, we have seen, is the method employed by the bank in its proper field.

The distinction which we have drawn between the two methods of placing, or marketing, capital, finds its analogue, we readily see, in a similar distinction in the methods of marketing commodities. A manufacturer may employ an agent, at a fixed commission, to bring his wares before the consuming public, or he may sell them to a merchant, who undertakes the responsibility of disposing of them to consumers.

We have now a view of the primitive forms out of which the complex structure of the modern financial mechanism has evolved. Capital may be transferred through loans or through partnership agreements; the transfer may be effected through agents, or through the medium of men or of institutions who borrow of those who have capital to lend, in order to lend, on more advantageous terms, to those who have opportunities for the use of capital.

The transfer of capital implies the creation of various instruments which serve as evidence of the claims of the capitalist. The simplest type of such instruments is the promissory note given by the debtor to his creditor. Where the sum to be raised by a loan is very great, as in the case of corporation loans, the resources of numerous lenders must be drawn upon. Instead of executing a great number of separate notes, representing the amount borrowed from each person, the corporation may execute a note covering the whole sum and deposit it with a trustee. The trustee may then prepare certificates representing shares in the loan, and deliver them to lenders as evidence of the sums loaned. Such certificates are known as "bonds." A government may issue similar certificates of indebtedness without executing a note representing the entire loan. In any case it is clear that government and corporation bonds are merely forms of promissory notes.

If money is to be raised through a partnership arrangement, the capitalist may receive, as evidence of his claims, a written instrument specifying his share in the capital of the business, and in the control of its operations. If a large sum is to be raised in this way, it is convenient to divide it into shares, represented by stock certificates, each entitling the holder to a definite share in the profits of the business and to a voice in its management.

Such instruments—promissory notes, bonds and stocks—are clearly not capital, but merely evidence of ownership of capital. We may, however, think of the purchase and sale of such instruments as the purchase and sale of capital, since the ownership of the underlying productive goods is transferred with the transfer of such instruments. For convenience we may speak of notes, bonds and stocks as "investments."

Investments of this character naturally differ widely in security and in productiveness. The long-period notes of business men are usually secured by the pledge of tangible

property of some kind, but the property pledged may represent a more or a less adequate guarantee of repayment. A loan secured by the pledge of land in the semi-arid region is not so safe as a loan secured by the pledge of land in a locality where crop failures are unknown. A series of dry years may depopulate a semi-arid district, and practically destroy the value of land there. Loans secured by suburban real estate are not as a rule so safe as loans secured by business property in the heart of a city. The bonds of a government like that of the United States are generally regarded as far safer investments than those of Japan; the bonds of the latter country are safer than those of Guatemala or Venezuela. Corporation bonds similarly vary widely in security. Experience has shown that corporations frequently fall bankrupt, in which case the bond holders may lose part or all of their invested capital. Stocks, as a rule, are yet more uncertain investments. When a new inter-urban railway is constructed, no one knows certainly that the business which it will carry on will yield a fair return on the capital invested; if it does not do this, dividends on its stocks will be low. Even in the case of an established business, changed conditions may annihilate profits and cause a suspension of dividend payments.

The rate of return on such investments naturally varies widely. Personal notes, secured by mortgage, may vary in return from four per cent. interest to ten per cent. or more. Corporation bonds may vary from three per cent. to eight; government bonds from two to ten or more. Dividends on stock vary from nothing to fifty or sixty per cent. on the par value. In the case of loans of all kinds, the productiveness varies inversely with the security, or rather, with the popular estimate of security. Turkish bonds yield a higher rate of interest than those of the United States, largely because no one knows how long the present Turkish constitution will stand.

Investments further differ in transferability. Suppose

that an investor in New York holds a note secured by a mortgage on a farm in one of the Western States. In some of the States such a note is not transferable at all. Even if the laws are such as to permit the sale of the note to a third party, the holder would find difficulty in disposing of it. The buyer would need to know something of the value of the property pledged as security, and this he might be unable to ascertain without examining it himself. The bonds of a small manufacturing or mercantile corporation in one of the minor cities would more easily find buyers in distant financial centers. Even these, however, would ordinarily be difficult to dispose of. The bonds of a great railway or of an industrial consolidation always find a ready sale. One who invests in a Pennsylvania Railway or a United States Steel Corporation bond knows that he can at any time find some one who will be ready to buy it from him.

As a rule, the greater the transferability of a form of investment, the lower will be its productiveness. Few investors are absolutely certain that they will not at some time desire to regain control of their funds. They will therefore take at par a bond that is easily disposed of rather than one of equal security and equal productiveness which they might find difficulty in selling. Consequently, the price of bonds of the former class will generally be higher than that of bonds of the latter class. A hundred dollars invested in the former class of bonds will yield a lower rate of interest than a hundred dollars invested in the latter class.

We may divide investments into two classes, those of a high degree of transferability and those of a low degree. Investments of the former class are specially adapted for those individuals who have funds of moderate size to invest. A small merchant, let us say, has retired from business, receiving for his store and stock \$100,000 in cash. He may, if he likes, buy State or municipal bonds, which will yield him an income of \$3,500 or \$4,000. If later he wishes a larger income, and is willing to take some risks, he may

sell his State or municipal bonds for very nearly the sum which he paid for them, and reinvest his capital in railway or industrial bonds, yielding \$4,000 or \$5,000. Or, he may buy railway or industrial stocks, yielding from \$5,000 to \$7,000. The variety of such investments open to him is very wide, and if he is a good judge of market conditions he may be able to invest in highly productive securities without incurring a high degree of risk.

In the purchase and sale of such securities the investor must employ the services of professional dealers, or "brokers," who execute orders on commission. If you have bonds or stocks which you wish to dispose of, you authorize a broker to find a buyer for you. If you wish to buy, you authorize the broker to find a seller. Naturally, the brokers dealing in stocks and bonds establish the custom of meeting at a fixed place, where those who have orders to buy may meet those who have orders to sell. Such a meeting-place, or market, is known as a stock exchange. For convenience, each exchange makes rules which brokers doing business there must observe. In their details these rules do not concern us here; in principle they are designed to insure effectiveness and fair dealing.

Practically all the securities dealt in on the exchanges are constantly fluctuating in price. The bonds of a country like the United States are unusually stable in value, yet a hundred dollar bond is somewhat cheaper at one time than at another. If the United States should become involved in a war, the price of its bonds would decline, because of the probability of new issues. Even the rumor of a war, however slight its foundation, may affect adversely the price of a nation's bonds. The bonds of a city may decline in value if the city government announces its intention of undertaking improvements on a large scale. The price of bonds of railway and industrial corporations is affected by every change in business conditions. Price fluctuation is still more common in the case of stocks. It is not unusual for the price

of a given stock to decline from \$150 per share to \$60 per share within a single year. Suppose that a company has been formed to exploit gold mines in Alaska. Its shares are offered on the market; we have read glowing accounts of the prospects of the company. It may earn enough to pay enormous dividends; it may earn nothing. What can be more natural than that opinion as to the value of the stock should fluctuate, and that the price of the stock should fluctuate accordingly?

In view of the constant fluctuations in securities, it is natural that some men should make it their business to buy stocks when they appear to be cheap, with the purpose of selling them when prices rise. This is one of the numerous forms of speculation. The buyers of stocks and bonds are commonly divided into two classes—investors and speculators. The former class buy chiefly with the purpose of enjoying a permanent income from the securities purchased; the latter, chiefly with the hope of profiting from a rise in price of the securities.

Naturally, the speculative buyer deals commonly in the securities that show great fluctuations in price, while the investor prefers the securities that have a comparatively steady price. Now, it is the securities of new companies that are most likely to fluctuate in value. After a company has been in operation for a number of years, its normal earning power becomes established, and the real value of its securities becomes fairly well settled. Thus there is a constant progress of securities from the speculative class to the investment class.

We can now see what one of the economic functions of stock speculation must be. So long as the success of a company is in doubt, the cautious investor will have nothing to do with it. Men who are willing to take risks—speculators—buy the securities of such a company, with the expectation of selling them later at a profit. In so doing they furnish the company with the funds necessary for carrying on busi-

ness operations. If the company succeeds, and demonstrates its power to produce a large and steady income, its securities acquire a stability of value fitting them for purposes of permanent investment. The speculators, in such case, gain large profits. In case the company is a failure, the speculator bears the loss.

It is of course true that stock speculation offers great opportunities for sharp practice. A group of speculators holding the stock of a gold-mining company may succeed in placing in circulation deceptive accounts of the prospects of the company, and so manage to dispose of their holdings to the unwary at unreasonably high prices. A group of speculators, desiring to purchase certain stocks at a low price, may circulate rumors of impending disaster, and so create a panic among holders of stocks. Nevertheless, it is to be borne in mind that the speculative buyer of stocks performs a very important economic function in furnishing capital for enterprises the success of which is still in doubt, but which may eventually prove to be highly profitable. The speculator stands in the position of a middleman, between the company which needs capital and the cautious investor.

Where enormous sums of capital must be raised, another functionary may be inserted between the company needing capital and the individual speculator or investor. Let us suppose that a great railway desires to raise \$50,000,000 by a new issue of four per cent. bonds. The bonds of that railway which are already outstanding may be selling above par. But no one can say exactly what effect on the price of bonds the new issue will have. Possibly the bonds will be taken by investors at par; possibly the price will fall to \$85 per hundred dollar bond. The railway company desires a definite amount of capital, and cannot afford to experiment. So its agents may make an arrangement with a group of financiers whereby the latter agree to insure the sale of the entire issue at \$95 per hundred

dollar bond. The bonds are then placed on sale at, say, \$100. If the investing public takes the bonds at this price, the group of financiers, or "underwriting syndicate," gains a profit equal to the difference between the price to the public and the price agreed upon between the railway company and the syndicate. If the public refuses to buy, the syndicate is compelled to take the issue of bonds at the price agreed upon—\$95. Possibly the syndicate will be able to dispose of the bonds later on favorable terms; possibly it will in the end be compelled to sell them at less than the price it has paid.

Where the securities underwritten by a syndicate are of a more speculative character, as for example the stocks of a new industrial corporation, the difference between the price placed upon securities offered to the public and the price to the syndicate is much greater. The possible profits of the syndicate are much greater; but so also are the possible losses.

We may now trace, in imagination, the course of the flow of capital from investor to enterpriser. A group of enterprisers desire to establish a great iron manufacturing business. They form a corporation with an authorized capitalization, say, of \$100,000,000. Stocks and bonds representing this capitalization are prepared, and arrangements made with an underwriting syndicate, whereby the latter guarantees the sale of the securities at an average price of, say, \$60 per hundred dollars of par value. The enterprisers can then proceed with their project of manufacturing, being assured of \$60,000,000 in cash.

The underwriters, of course, had no intention of permanently investing \$60,000,000 in the iron business. Possibly the public does not at first care to take the securities, however, in which case the syndicate must make at least a temporary advance of the capital.

As the company progresses with its operations, public interest is aroused. Speculators become convinced that the

securities of the company will advance in value, and place orders with their brokers for such securities. After a time the syndicate has sold all its securities to speculators. These, then, are the persons advancing the capital to the company. With every report of the progress of the company the price of its securities changes. If the progress is unsatisfactory, the speculators who first purchased securities may lose heart, and sell at a loss to other speculators. If the company makes rapid progress, the first purchasers may sell at an advance, preferring to take profits rather than wait for still further advances. After the lapse of a few years, during which time the securities pass rapidly from one set of speculators to another, the earning power of the company becomes established. It becomes generally known, let us say, that the company will be able to pay interest on its bonds and five per cent. on its stock. Gradually the prices of its securities become fairly stable, and these securities find their way into the hands of permanent investors.

It is, of course, not inevitable that the flow of capital from permanent investor to active enterpriser should take such a roundabout course. A company may send circulars to persons who are believed to have capital to invest, offering stocks or bonds at fixed terms. This method may be entirely satisfactory when the business of the company is already well established, and its reputation excellent. If the business is a new one and its results doubtful, the roundabout method is more likely to be successful.

We may now consider briefly certain institutions which place themselves between the investor and the enterpriser who seeks to raise capital, and which subserve especially the requirements of the small investor, who has not the time or the knowledge to form a correct judgment of the value of securities.

A company may be formed for the sole purpose of dealing in the securities of other companies. Such a company—which we may call an investment company—places its stock

upon the market, and invests the proceeds of the sales of such stock in the stocks and bonds of banking, railway, franchise and industrial corporations. The interest and dividends from such securities make up the gross profits of the investment company. From these profits are deducted the expenses of administering the company; the remainder may be distributed among its stockholders as dividends. The advantages of such a company are obvious. It can employ men who are thoroughly familiar with the securities market to purchase stocks and bonds when the condition of the market is favorable. Since it purchases on a larger scale than the ordinary investor, it may participate in underwriting syndicates, and so obtain securities at a much lower price than the outside investor must pay. It may distribute its investments so that when some of them fail to yield the expected returns, there may be a chance that others will yield unusually large returns. Thus the stockholders of the investment company are made more certain of a steady income than they would be if they invested their funds directly.

Further, the investment company may deal in securities of undoubted value, which are nevertheless not well enough known to be easily transferred. There is no reason why the investment company should ever part with such securities. It may purchase mortgage notes which never would find a purchaser on the general market; it may lend its funds directly, with proper security. Now, the non-transferable investments yield, as a rule, higher returns than those that are easily transferred. Accordingly, the man who invests his funds through an investment company may enjoy the higher income that non-transferable investments yield; at the same time, he can at any time regain control of his funds through the sale of his stock in the investment company.

From an economic point of view, the investment company is a device which serves to direct capital to the more productive channels. In present-day business it has largely

been diverted to another purpose—that of stifling competition. Let us suppose that in a given territory two railways are actively competing for business. Neither can charge as high rates as it could if it enjoyed a monopoly. Now, let us suppose that an investment company buys up a majority of the stock of both railways. It may then appoint the directors of both railways, and require them to adopt policies which enable each to fix high charges for service. In this way the earnings of the railway companies, and hence of the investment company, are increased. Hostile federal legislation, it is true, has limited the efficacy of the investment company as a means for destroying competition between railways; but the same device is widely employed in the case of manufacturing corporations.

It is only persons possessing at least a moderate amount of free capital who can purchase with advantage investment-company shares. Persons who have no other resource than their daily labor need to save some part of their incomes against sickness, old age or misfortune; and these savings should be placed where they may at once begin to earn interest. The artisan who saves \$5 a month cannot be expected to keep the money on his premises until he has accumulated enough to buy a share of stock. This would involve keeping part of his savings idle for perhaps twenty months. It would, moreover, expose such savings to the recurrent temptation to spend. Hence the need of an institution which will accept savings deposits, however small, paying interest on them from the beginning, and which will return them to the depositor upon reasonable notice. Such an institution is the savings bank.

Unlike the commercial bank, described in the last chapter, the savings bank can depend upon a certain permanence of deposits. Men who entrust their funds to such an institution do so, as a rule, with the expectation of leaving them for an indefinite time, to earn interest. The savings bank may require its depositors to give some days' or weeks'

notice of intention to withdraw deposits. Furthermore, interest may be allowed only at the end of six months' periods; withdrawal at any time within such periods may involve the forfeiture of accrued interest.

Some part of the deposits of a savings bank must be kept as a cash reserve, to meet possible withdrawals, but this reserve need not be so large as that of a commercial bank. The remainder of the deposits may be invested. State laws generally specify the classes of investments that a savings bank may make, with a view to insuring the depositor against loss through insecure investments. Real estate mortgages, Federal, State and municipal bonds, are the favorite investments of such institutions. The real estate mortgages present the advantages of security and a high degree of productiveness; government bonds, while yielding low returns, are easily convertible into cash whenever an unusual volume of withdrawals renders this necessary.

Savings banks may be organized as mutual associations, in which case all the profits from investments are distributed among the depositors as interest. They may be organized as joint stock associations, the excess of earnings above stipulated interest to depositors being distributed among the stockholders as dividends. The latter form of organization prevails in the West, the former in the East. In foreign countries the place of the mutual savings bank is taken by trustee, municipal and postal savings banks. In general, it is recognized that the proper function of the savings bank is to promote thrift among the poorer classes, not to afford an opportunity for profit to the well-to-do. Hence the small depositor is frequently given the preference over the large depositor, receiving a higher rate of interest. In many cases the size of the individual deposit is narrowly limited.

In recent years an institution has appeared which offers better opportunity for the deposit of large sums than the mutual or governmental savings banks can offer. This in-

stitution is the "trust company." Persons having large funds of free capital may deposit them with a trust company, receiving interest at a low rate, and retaining the privilege of withdrawal on demand. The trust company is usually, by law, granted far greater latitude in the investment of its deposits than the savings bank enjoys. In many cases it may participate in syndicate operations, and so obtain securities more cheaply than most individuals could do. In any case it is in an excellent position to invest funds entrusted to it in highly productive ways; hence it is able to pay large dividends to its stockholders while paying a reasonable rate of interest on deposits.

A financial institution which in some parts of the country takes the place of the savings bank in promoting saving among the working classes is the building and loan association. Each member of the association purchases a certain number of shares of "stock," paying for them in monthly instalments. If at any time he wishes to withdraw, the association returns to him the sums which he has paid in, with or without interest, according to the time that has elapsed since his first payment. If a member desires to build a house, he may borrow from the association a sum not exceeding the par value of the stock in the association which he holds. As security for the loan, he gives a mortgage upon the house which he builds with the aid of the loan. He further binds himself to make monthly payments to the association which represent interest on the loan, plus some part of the principal. Without entering upon the details of the organization of such an association, we can see that its purpose is to collect sums of capital from persons of small means, with the purpose of loaning them to other persons of small means who desire to own homes. The latter class pay the interest that the former class receive.

One further institution requires notice here: the life insurance company. From a financial point of view, the life insurance company is a device for accumulating savings

which shall be returned, not to the man who saves, but to his heirs at his demise. Some of the insured, it is true, die long before the sum of the premiums they have paid equals the sum that the insurance company has agreed to pay at their deaths. On the average, however, the insured live long enough so that their premiums, together with the earnings of the capital which those premiums form, are at least equal to the sums which the insurance company pays out at the death of the insured.

It is obvious that in a country like the United States, where life insurance is exceedingly common, immense sums of money must be collected by the companies every year, to be held as a reserve against death claims. As the business of life insurance is steadily growing, the funds representing life insurance reserves are also steadily on the increase. The annual receipts of practically every important life insurance company exceed the annual disbursements. Accordingly, a life insurance company may invest its reserves without much regard to the possibility of turning its investments into cash at short notice. It is important, however, that the business should be conducted in a conservative manner, since the failure of an insurance company would be a more widely felt calamity than the failure of almost any other business enterprise of equal magnitude. The loss would be borne in the end largely by the dependents of propertyless men.

The reserves of life insurance companies are largely invested in real estate mortgages, in State and municipal bonds, and in the bonds of banking, railway, commercial and industrial corporations. Stock investments have been made by insurance companies, but the practice is now generally regarded with disfavor, since the values of stocks are likely to show a wide range of fluctuation.

It is to be understood, of course, that the various financial institutions are all more or less closely interrelated. The insurance company and the savings bank may make use of the commercial bank and the trust company for the hand-

ling of current funds. The trust company has played an important rôle in the underwriting of new issues of securities, and so has taken direct part in the more speculative side of finance. Commercial banks, moreover, are increasingly important factors in the world of speculative finance. Individual speculators who anticipate a rise in the price of a certain stock buy not only as much as their own resources will permit, but also borrow large sums from the banks for the purpose of stock purchase. Thus some part of the fund of temporary capital is drawn into the field of permanent investment.

CHAPTER XVIII

INTERNATIONAL TRADE AND FOREIGN EXCHANGE

From early modern times, when men first began to think systematically upon economic subjects, a great deal of attention has been bestowed upon the exchange of goods between persons living under different governments, or international trade. It was for a long time believed (and it is still widely believed) that such trade differs radically in its nature from trade that is carried on within the limits of a single country. While the latter, it is generally admitted, is an unmixed good, and ought to be encouraged, or at any rate granted the most perfect freedom by government, the former, many believe, is often a doubtful blessing and ought to be closely scrutinized and regulated, and, under many circumstances, discouraged or even prohibited. Whether there is any justice in this distinction between the two branches of trade is a question that we must defer to the next chapter. For the present, we are concerned with the conditions giving rise to international trade and the mechanism by which it is carried on.

All permanent exchange originates in differences in character of productive powers. To employ a simple example, drawn from the field of domestic trade, if A can make three pairs of shoes in a day while B can make only two, and B can cut two cords of wood in a day while A can cut only one, the basis for permanent exchange between them exists. It will pay A to get all his wood from B, exchanging shoes for it. The assumed difference in character of productive powers may have originated in differences in natural aptitudes or it may have originated in differences in training. In either case the difference in productive pow-

ers is the essential basis of a continuous interchange of commodities.

But suppose that A can not only make more shoes in a day than B can make, but can also cut more wood. Does this supposition preclude the possibility of a permanent interchange of products between A and B? Not at all. Suppose that A can make three pairs of shoes in a day or cut two cords of wood, while B can make only one pair of shoes, or cut only one cord of wood. With two days' work B can produce as much wood as A can with one; with two days' work he cannot produce as many shoes as A can with one. Accordingly, it would pay him to offer A the product of a little more than two days of his own work at woodcutting, in exchange for the product of one day of A's work at making shoes. And it would pay A to accept the offer. B suffers under a disadvantage in either occupation, but his disadvantage is less in woodcutting than in shoemaking. A enjoys an advantage in either occupation, but his advantage is greater in shoemaking than in woodcutting. Common sense, then, urges B to confine himself to cutting wood, A to making shoes.

In the trade between inhabitants of one part of the earth's surface with those of another part, differences in personal aptitudes and training of the character assumed in the foregoing example are supplemented by differences of a more general nature. One region may have excellent mineral deposits but lack fertile land for the growing of food; another region may be quite devoid of minerals, but abundantly supplied with rich lands. In one region the character of the population may be such as to fit it for kinds of work requiring skill and taste, but not such as to fit it for kinds of work requiring great muscular strength and endurance. In another region the population may be almost incapable of acquiring taste and skill, although it is well fitted for labors demanding rude muscular power. Capital may be plentiful and cheap in one region and scarce and dear in

another. In this case industries requiring vast capitals can be operated to greater advantage in the former region than in the latter. Land may be plentiful in one region, relatively to the population, and scarce in another. Industries requiring an extensive use of land will find their natural habitat in the former region. The populations of two regions, though differing little in fundamental character, may differ widely in their attitude toward particular forms of toil. They possess different habits, or, more properly, traditions of workmanship, which fit the one better for one kind of labor, the other for another. So long as any of these differences persists, there is obviously reason why there should be differences in the industries of the two regions. With adequate means of communication, trade between the two regions naturally arises.

We have spoken of differences between regions, not differences between nations. From a purely economic point of view, trade is either local or interregional, not domestic or international. The trade between Belgium and the adjacent *départements* of France is economically of the same character as the trade between Rhode Island and Massachusetts. The trade between California and Hawaii is of the same essential character as the trade between New York and Santo Domingo. From an economic point of view domestic trade is that which originates in such differences in natural aptitudes and industrial training as may for a long time persist on the same soil. Differences in natural endowment, in general character of population, in rates of wages and interest, characterize interregional trade. As a rule, however, international trade is also interregional; hence the principles that apply to the latter may without serious qualification be applied to the former.

In some cases the products of two regions are quite dissimilar. Neither region can produce the commodities which it receives from the other. Thus in the Middle Ages an important trade was carried on between Northern

Europe and the Indies. The former region furnished furs and amber, the latter, spices and gems. A modern example of the same sort of trade is the exchange of iron and steel products for teas, coffee and spices between England on the one hand and the East Indies on the other. In general, the trade between countries in the temperate zone and countries in the torrid zone is largely of this character. Trade having this basis is naturally permanent; with every reduction in costs of transportation it tends to increase. Decline in railway and ocean shipping charges places more and cheaper tropical products in our hands, and places more of our products in the hands of the inhabitants of the tropics. Furthermore, we are, as a people, gradually learning to appreciate the good qualities in tropical products that a short time ago we held in slight esteem; and we may assume that a corresponding evolution is taking place in the tastes of the inhabitants of the tropics.

More commonly one of the trading regions, or both, can produce both classes of commodities exchanged. The United States can produce both sugar and pork; so also can Cuba. But the United States possesses exceptional advantages for the production of pork; for the production of sugar it is not especially well adapted. Cuba, on the other hand, has unsurpassed advantages for the production of sugar, but can produce pork with only a moderate degree of success. It is, therefore, natural that an exchange of products between the two countries should take place. Were there no artificial hindrances to such exchange, we should readjust our production somewhat, so as to produce more of the commodities that Cuba needs, and Cuba would devote more of her productive resources to the growing of sugar for our consumption.

Differences in the essential character of the populations of two trading regions are difficult to define, since the characters of nations, as of individuals, are always thickly overlaid with custom and habit. Nevertheless, we may be quite

sure that such differences exist. The German is not exactly the same kind of man as the Englishman, even if due allowance is made for acquired traits. Still less is the Japanese the same kind of man as the American. It is therefore safe to assume that in some of the manifold branches of industry the German will be superior to the Englishman, while in some he will be inferior. We may certainly assume that in some branches of industry the Japanese will be more successful than the American, while in other branches he will be less successful.

Cotton can be grown successfully by the native population of Central Africa. The tedious labor under a tropic sun is more easily borne by the native blacks than it would be by persons of European descent. The manufacture of cotton cloth by modern methods requires a higher degree of intelligence, perseverance and responsibility than the native population possesses. This branch of the industry may better be carried on in a country like England, where the population has the required traits in a high degree of development. Accordingly, there is a natural basis for permanent trade between England and Central Africa. Trade based upon such essential differences in national character also tends to increase in importance with improvements in the means of transportation and communication.

Trade based upon differences in relative supply of land attained extraordinary proportions during the nineteenth century. The Old World, for the most part, was densely peopled; in the New World population was sparse. It is a well-known fact that the largest output per workman of agricultural products is attained through the superficial cultivation of large areas. England may have lands that are naturally better adapted for the growing of wheat than the lands of Argentina. But one man cultivating twenty acres in England cannot possibly produce as many bushels of wheat as one man cultivating two hundred acres in Argentina.

In manufactures, on the other hand, density of population, instead of reducing productive efficiency, tends to increase it. Men who live in constant association are better fitted for the organized activity of the modern factory than are men who pass their lives in the isolation of the frontier. Hence an exchange of agricultural products for manufactures between the New World and the Old was in the natural order of events.

During the greater part of the nineteenth century trade between the United States and England was chiefly of the character just described. The United States had vast tracts of land for extensive cultivation; England had a dense population well fitted for factory labor. Hence we exported foodstuffs and raw materials and imported manufactures.

While trade upon this basis tends to increase with reduction in costs of transportation, there is a countertendency at work which in time checks it. Immigration flows into the regions rich in land; the natural increase of population in those regions is likely to be rapid. In the end such regions lose their peculiar advantages in the production of foodstuffs and raw materials, and gain in power to produce manufactures cheaply. Trade of the character under discussion may continue for centuries, but ultimately it decays. The United States still exports large quantities of foodstuffs and raw materials, and imports manufactured goods. But these elements in our foreign trade no longer maintain their former supremacy. In another century the United States will doubtless import chiefly raw materials and foodstuffs from regions which remain sparsely peopled and export manufactures in exchange.

We need not dwell at length upon the trade that is based upon differences in the supply and cheapness of capital. So long as England was *par excellence* the land of capital, and so long as English capitalists were unwilling to invest their funds in foreign lands, there were many branches of manufacture that could be prosecuted with far greater advantage

in England than in other countries. In practically every branch of manufacture, in fact, the interest on capital makes up a far larger proportion of the total expenses than in grazing, agriculture, lumbering, etc. It is easy to see, then, that English manufacturers, with interest at five per cent., enjoyed a decided advantage over American manufacturers, with interest at eight per cent. The English farmers and stockmen, it is true, also had an advantage in interest rates over their American competitors. But the advantage was of less relative importance and more easily offset by other factors in which the Americans enjoyed an advantage, such as cheaper land.

Under present-day conditions no country can long hold a branch of trade merely through cheapness of capital. Like labor, capital tends to migrate to the less developed regions of the world; its migration involves far less personal sacrifice and far less cost. Furthermore, capital increases rapidly in the newer lands. If interest rates were much higher in the United States than in Great Britain, British capital would steadily flow into the former country; and this influx of capital, added to the new capital constantly accumulating here, would tend to depress interest rates, until there remained no perceptible difference in the rates prevailing in the two countries. The trade based upon differences in capital supply may, therefore, be regarded as transitory.

In a region that has long been devoted chiefly to a given branch of industry, something that we may call a tradition of workmanship evolves. The best type of iron worker is not developed in a single generation. The mill that is manned with workers whose fathers and whose fathers' fathers were reared in a world of iron manipulation possesses a decided though indefinable advantage over the mill that is manned with workers whose antecedents were of the field or forest. Costly experiments in settling urban stock upon farms have demonstrated the soundness of the popular view that it takes generations to make a farmer. Still more im-

portant is the tradition of workmanship in industries requiring a high degree of taste and skill. Where is the Occidental who can produce a true Oriental rug?

When other conditions are ripe, the population of any region may develop the tradition of workmanship necessary for the successful prosecution of any specific branch of industry. But no region can be expected to gain a superiority in all lines. We may at some future time be able to make gowns as well as the French, and ivory toys as well as the Japanese. But there will always be objects of taste which we must buy from the French and the Japanese. Trade based upon such differences may, therefore, be treated as permanent in character.

In the foreign trade of a great country like the United States or Great Britain, it is natural that we should find one part having one underlying basis, another part another basis. In many cases the exportation or importation of a commodity arises from a combination of several of the causes which we have described as bases of trade. The exportation of iron and steel products from Great Britain to India is based upon the fact that Great Britain has vastly superior deposits of iron ore and coal, cheaper capital, and a population better fitted than that of India for metallurgical industry and possessing a superior tradition of workmanship. The exportation of wheat from the United States to England is based solely upon the greater abundance of land, relatively to the population, in the former country. The importation into the United States of French articles of taste may be due in part to superiority of the French national character, in this respect; but it is undoubtedly due in large part to a superior tradition of workmanship on the part of the French.

We have, hitherto, considered only cases in which each one of two trading regions possesses unique, or at any rate superior, advantages in the production of the commodities which it exports. Under certain conditions trade may be advantageous even when this is not the case. To use a

time-honored illustration, let us suppose that the United States, by reason of its natural wealth and the character of its population, is in a better position to produce both wheat and steel than England. A day's labor will produce more of either commodity in America than in England. Yet it may be profitable for the United States to buy its steel from England, giving wheat in exchange. We will assume that in America a day's labor will produce four bushels of wheat or two hundredweights of steel, while in England a day's labor will produce one bushel of wheat or one hundredweight of steel. Disregarding the costs of transportation, it would be profitable for America to offer England three bushels of wheat in exchange for two hundredweights of steel, and it would be profitable for England to accept the offer. America would thus obtain two hundredweights of steel for three-fourths of a day spent in wheat growing, instead of spending a whole day's labor in making the steel. England would obtain three bushels of wheat through two days' labor spent in steel making, instead of spending three days' labor in producing the same amount of wheat. America possesses an advantage in either industry, but her advantage is greater in wheat growing. England is at a disadvantage in either branch of production, but her disadvantage is less in steel making. It is, therefore, natural, under the assumed conditions, that America should make a specialty of wheat production, England of steel making, and that the two countries should carry on a mutually profitable trade.

This case is obviously analogous with the case of exchange between shoemaker and woodcutter which we employed in the early part of this chapter. But while any person of ordinary intelligence can see how it may be profitable for an efficient shoemaker to hire a man less fitted than himself for woodcutting to supply him with wood, it appears to be beyond the comprehension of most ordinary men, and many extraordinary ones, that a country can profitably pursue the same business policy. Since a day's labor

does actually produce more steel in the United States than in England, many men believe that it must be unprofitable for us to buy steel from England. Obviously, they fail to consider the possibility that we may have other industries so much more productive than those of England that we cannot afford to divert our labor to the making of steel.

Let us look at the matter from another point of view—that of prices and money cost of production. The men who engage in the business of importing and exporting commodities do not inquire into underlying bases of trade. Their inquiries begin and end with prices. Is steel cheaper in England than in America? If so, and if the difference is great enough to pay the cost of transportation, they import the steel, unless they are prevented by government from doing so. Is wheat cheaper in America than in England? If it is enough cheaper to pay the costs of transportation, they export it.

But why should steel be cheaper in England than in America, while wheat is cheaper in the latter country? Prices, we know, tend to equal money cost of production; therefore we may assume that it costs less to produce steel in England, wheat in America. Our inquiries cannot stop here, however, for we must know why it costs more to produce the one commodity in the one country, the other commodity in the other country.

Ask a steel manufacturer why it costs more to produce steel in this country than in England, and he will probably reply, "Labor is dearer." The pay of English steel workers is, indeed, lower than that of steel workers in America, but so also is the pay of English agricultural laborers lower than that of farm hands in America. It is, therefore, plain that it is not the low wages, absolutely considered, that give the British steel manufacturer an advantage, but the low wages, relatively to the high productive efficiency of the workmen. Low wages do not make British agriculture prosperous, because the productive efficiency of laborers in that industry

is low, relatively to wages. The disadvantage of the British steel industry as compared with the American is less than the disadvantage of British agriculture as compared with American.

We shall get a clearer view of the situation if we stop to consider the principles determining cost of production. Wages and interest are the chief constituents of cost of production; but we will fix our attention upon wages alone. In earlier chapters we saw that wages are determined by the marginal productivity of labor. Now, let us suppose that one trading region has a vast extent of fertile land and a sparse population. Only the best lands are tilled and these in a superficial way. Add a thousand laborers to the population. How much can they produce? Perhaps five bushels per man a day. This amount of wheat, or the price of it, they can demand as wages; all other equally efficient workmen will get as much, but no more. Another trading region has, let us say, a dense population and little land. All the good lands are carefully tilled; most of the poor lands are also under cultivation. Add a thousand men to the working population. It is highly improbable that these men will increase the product by five bushels per man per day. Rather, we may assume that the daily product of a man is only one bushel. And this, or its price, is all that any equally efficient laborer in the society can get.

If the two regions are in easy communication with each other, the price of wheat in the one will be the same as the price in the other, allowance made for the cost of shipping wheat from the one to the other—a few cents per bushel, we will assume. This means that money wages will be much higher in the region which is sparsely settled than in the region where population is dense.

Now let us suppose that each region possesses ores and coal, but that the deposits of the sparsely settled region are so much the richer that a day's labor will produce from them twice as much steel as a day's labor will produce from the

deposits of the densely settled region. Enterprisers of the former region will have to pay miners, furnacemen, etc., at least as much as they could earn in agriculture—the price of five bushels a day. Enterprisers in the region of dense population will also pay wages gauged by the returns to agricultural labor—the price of one bushel a day. A simple calculation will show that steel manufacturers in the region of dense population can produce steel much more cheaply than their competitors in the other region.

In order to make our example correspond more closely with reality, we should need to substitute, for steel making only, a wide range of industries, mainly manufacturing; for wheat raising we should substitute a wide range of industries, mainly extractive. We might then say, with perfect truth, that in a sparsely settled land the marginal productivity and consequently the wages of labor are likely to be so high that manufactures cannot be carried on profitably in competition with a densely settled land, where the marginal productivity of labor, and hence wages, are low. American manufacturers of iron and steel products have for a century been forced to pay higher wages than English manufacturers, largely because the productivity of labor in agriculture was so much higher here than in England.

We have now to consider the mechanism whereby the exchange of goods between trading regions takes place. In early times, interregional trade, like all other forms of trade, was carried on through barter. The Phœnician merchant, we may safely assume, carried to each port commodities that he thought would be in demand there, and bartered them for commodities which he desired. In a later stage money was employed, but chiefly for effecting exchanges within a single locality. The artisan merchants of the mediæval Hanse towns trading with England carried cloth and other wares to London and exchanged them for wool and other English products. Doubtless when in England the Hanse merchants often first exchanged their wares for the local currency, and

exchanged the currency in turn for goods to carry back to Germany. From the point of view of the two trading regions, the trade was an exchange of goods for goods, in spite of the employment of currency in England.

In a later stage the importation of goods is partly divorced from the exportation of goods. Men having goods that they believe will fetch a high price in a foreign market ship them abroad, expecting to receive the price of the goods in the form of gold and silver. Men wishing to buy foreign goods send gold and silver in payment for them. Hence, exportation and importation of the precious metals may be often carried on concurrently, at a considerable risk and expense. Here obviously is opportunity for the development of a system of set-offs, to reduce the transmission of the precious metals between two trading regions to a mere settlement of balances. This mechanism, which long ago attained perfection, we shall now describe in its essential elements.

Let us suppose that A, a New York exporter, has sold 10,000 bushels of wheat to X, a Liverpool importer, at the price of \$1 a bushel. If he wishes the \$10,000 delivered to him at New York, in gold, he must, of course, pay freight and insurance on it. This will cost about \$3 for every \$500, or \$60 for the entire sum.

But suppose that after shipping the wheat, and before giving orders for the delivery of the gold, he meets B, a New York importer, who is about to order \$10,000 worth of woolen goods from Y, a Liverpool exporter. If B were to ship the \$10,000 in gold to Liverpool, it would cost him \$60 for freight and insurance. Now, if A will give B an order instructing X to pay Y the \$10,000, instead of remitting it to himself, B can pay A the \$10,000 that he would otherwise have remitted to Y. Both debts will be extinguished by such an arrangement, and both A and B can save \$60 by it.

Such an order as we have assumed that A gives to B,

requesting X to pay Y a certain sum originally due to A, is known as a bill of exchange. Such a bill may be payable as soon as it is presented to the person upon whom it is drawn, or it may be payable after the expiration of a period of time—twenty, thirty, sixty days. In the former case it is a “sight bill,” in the latter a “time bill.” Time bills usually bear interest—a fact that assimilates them to other credit instruments, but has no bearing on the principles of exchange. We shall therefore assume that bills of exchange are sight bills only.

In our example it appeared that both A and B gained \$60 by the arrangement. Now, if B had been unwilling, for some reason, to give A \$10,000 for the latter’s bill of exchange, A might have taken less. It would have been more profitable for him to take \$9,950 than to incur the expense of importing the gold. If B had offered \$9,940, it would have been a matter of indifference to A whether he sold his bill to B or imported the gold. \$9,940 is evidently the very lowest price at which the bill would be sold at all. On the other hand, if A had been unwilling to part with his bill for just \$10,000, B might have offered more, for he could better have afforded to pay \$10,050 for the bill than stand the expense of exporting gold. If A had demanded \$10,060, it would have been a matter of indifference to B whether he bought the bill or shipped the gold. \$10,060 is then the very highest price that a \$10,000 bill can be made to fetch.

When a bill of exchange sells for just its face value, it is said to be at par; when for more or less, it is above or below par. We have now to inquire under what conditions bills will be at par, or above or below par.

If the importer whom we designated as B thinks that the chances are good that he can find other exporters besides A who are anxious to dispose of bills of exchange, he is likely to offer less than par for A’s bill. If one of the holders of bills will not sell at a low price, another probably

will. If, on the other hand, A thinks that he can easily find other persons besides B who have payments to make abroad, and who are anxious to purchase bills for the purpose, he is likely to hold his bill at a price above par. In general terms, when the volume of bills offered for sale appears to exceed the volume of remittances to be made to a foreign center, bills fall below par. When the volume of bills appears to be inferior to the volume of remittances to be made, bills rise above par. In the former case, each holder of a bill knows that some bills cannot be sold at all; their holders will have to go to the expense of importing specie. Rather than be left in this position himself, he is willing to sell his bill at less than its par value, provided that the price offered is not so low that to bear the cost of importing specie would be a lesser evil. In the latter case each person having remittances to make knows that some men will have to go to the expense of exporting specie. Hence each one will offer more than its par value for a bill of exchange.

If the volume of bills to be sold just equals the volume of remittances to be made, it is easy to see that bills must sell at par.

We must now endeavor to determine the conditions under which the volume of bills equals, is superior to, or inferior to, the volume of remittances. We shall assume that the relations between the United States and Great Britain are carried on without regard to relations with other countries, and that American business is all handled through New York, British through London.

The United States, we will assume, exports in one year products worth \$300,000,000 to Great Britain, and Great Britain exports products worth \$200,000,000 to the United States. Under the head of exports and imports, we shall have bills on London aggregating \$300,000,000, and remittances to make aggregating only \$200,000,000.

Citizens of the United States still owe vast sums to citizens of Great Britain; citizens of Great Britain owe

lesser sums to citizens of the United States. Interest on these debts will be transmitted by way of exchange. Let us say that Great Britain must pay us \$5,000,000 while we must pay Great Britain \$25,000,000. This will add \$5,000,000 to the total volume of bills, and \$25,000,000 to the aggregate of remittances.

Some American borrowers are paying off their debts to British capitalists; others are borrowing fresh capital. The sum of payments at present probably greatly exceeds the sum of new loans. We will put the former at \$50,000,000, the latter at \$25,000,000. Under this head, then, we may add \$25,000,000 to the volume of bills, \$50,000,000 to the volume of remittances.

Americans living or traveling in England must have their incomes sent them from here; Englishmen living or traveling here must have their incomes sent from England. Let us suppose that we must send \$15,000,000 to our citizens in England; England must send \$5,000,000 to her citizens here. This would add another \$5,000,000 to the volume of bills, \$15,000,000 to the volume of remittances.

Most of our trade with Great Britain is carried on by British ships. We must, of course, pay for the service, and our payments must be sent to Great Britain. We will place the aggregate at \$75,000,000. What we carry for Great Britain is too little to take into account. So we must add \$75,000,000 to the volume of remittances without any offsetting increase in the volume of bills.

DUE THE UNITED STATES		DUE GREAT BRITAIN	
Exports.....	\$300,000,000		\$200,000,000
Interest.....	5,000,000		25,000,000
Proceeds of new loans.....	25,000,000	Repayment of old loans.....	50,000,000
British travelers' expenses.....	5,000,000	American travelers' expenses.....	15,000,000
Payment for ocean transportation.....			75,000,000
	<u>\$335,000,000</u>		<u>\$365,000,000</u>

Footing up the assumed items of indebtedness, we find that the United States can draw bills to the amount of \$335,000,000, but must make remittances to the amount of \$365,000,000. Obviously, exchange on London will be above par under the conditions. Any or all of the items may change before the end of another year, so that the balance will incline the other way.

For simplicity we assumed that the exchange relations between the United States and England were not rendered more complicated by relations with other countries. This assumption we must now abandon. The United States buys coffee from Brazil. Brazil buys manufactures from England. England buys wheat from the United States. Now, it is evident that Brazilian coffee exporters will be glad to accept from American importers bills of exchange drawn on London, as these bills will be in demand among Brazilian importers of British manufactures.

If the sums that Americans must remit directly to England aggregate \$300,000,000, and the sums that England must pay directly to the United States aggregate \$325,000,000, bills drawn on London may yet be above par. For American coffee importers may need, say, \$40,000,000 in bills on London to make payments in Brazil. In this case, the remainder of the volume of bills will not be sufficient to meet the demand for them, and they will go above par.

Even if the Brazilians imported nothing from England, bills drawn on London would nevertheless be acceptable to them as means of payment for their exports. Brazil must import from some country, and that country, in all probability, has payments to make in England, and so will accept bills on London in preference to gold. This follows from the fact that England has for a century been the financial and commercial center of the world. The whole world deals with England. Hence bills of exchange drawn on London have become a favorite medium of international payments

throughout the world. If you wish to remit money to a missionary in China or to a stockman in Patagonia, you will probably do it through exchange on London. Similarly, if Chinese or Patagonians have remittances to make to you, they will employ exchange on London for the purpose.

Accordingly, the demand for bills on London is practically equal to the whole volume of payments to be made by Americans to persons living outside of the United States; the supply of bills amounts practically to the aggregate payments to be made by such persons to Americans. When we must pay foreigners exactly as much as they must pay us, exchange on London is about at par. When the balance of payments is in our favor, exchange is below par; when the balance is against us, it is above par. Naturally, exchange on London is expressed in terms of the British currency—pounds sterling. When exchange is at par, the pound sterling is quoted at $\$4.86\frac{2}{3}$. When exchange is above par, an American who wishes to remit a pound sterling to England must pay more than $\$4.86\frac{2}{3}$ for it—perhaps $\$4.88$. If the price of a pound sterling (exchange) rises above $\$4.89\frac{2}{3}$, it pays better to ship gold. The point at which all advantage in employing bills of exchange instead of gold ceases, is known as the gold point. If the price of the pound sterling declines to $\$4.83\frac{2}{3}$, it pays holders of bills to send them over to England for collection, with orders that the gold be shipped to America. $\$4.83\frac{2}{3}$ is therefore also known as a gold point.

If we assume that other items of international payments (transmission of capital, interest payments, travelers' expenses, payments for ocean transportation) remain constant, it follows that fluctuations in exchange follow fluctuations in exports and imports. If we increase our exports, imports remaining unchanged, the supply of bills increases, and their price tends to fall. If we increase our imports, exports remaining the same, the volume of remittances to be made increases, and exchange rises in price.

Now, when bills are above par it is more than usually profitable to export goods. Let us suppose that in New York the price of wheat is ninety-four cents a bushel, while in England the price is \$1. If it costs five cents a bushel to ship wheat from New York to England, the exporter will make \$100 on a 10,000 bushel shipment, if exchange is at par. If exchange is at its maximum above par, the exporter will be able to sell his \$10,000 bill for \$10,060, thus adding \$60 to his nominal profit of \$100. If exchange is at its minimum below par, the exporter can get only \$9,940 for his \$10,000 bill, thus losing \$60 of his nominal profit of \$100. If a profit of \$100 on 10,000 bushels is just sufficient to induce exporters to ship wheat, no wheat will be shipped if exchange is below par.

When exchange is below par, it is more than usually profitable to import goods. Let us suppose that it barely pays to import a certain kind of woolen goods when exchange is at par; that under these conditions the importer makes only \$100 on a \$10,000 shipment. If exchange is at its lowest price the importer can pay for his goods with a \$10,000 bill costing only \$9,940. Thus he adds \$60 to his profits. If exchange is at its highest price, and the importer must pay \$10,060 for a \$10,000 bill, \$60 is deducted from his profit, and the business ceases to be worth while.

It follows that there is a tendency for an excess of either exports or of imports to check itself. If our exports increase, other things equal, exchange falls, and this discourages further exports, but encourages imports. If our imports increase too rapidly, exchange rises, and this discourages further imports and encourages exports.

The fluctuations of the rate of exchange, then, have a tendency to create a balance of exports and imports—allowance made for other items of international indebtedness. Exports and imports, in the long run, must increase or decline together.

But suppose that the margin between prices in two

countries is so wide that it pays to export in spite of a low price for exchange, or to import in spite of a high price. In the former case, gold must be imported to pay for the exports; in the latter gold must be exported to pay for the imports. Now, we saw in an earlier chapter that an increase in the supply of money tends to raise prices; a reduction of the money supply causes prices to fall. If, then, our prices are so low that men find it profitable to send an excess of commodities abroad for sale, to be paid for in gold, the condition must be transitory. For as the gold flows into the country, prices rise, and the exporters' gains grow smaller and smaller. If on the other hand general prices here are so high that it pays importers to bring into the country vast amounts of goods, to be paid for by exportation of gold, the condition must be equally transitory. With the efflux of gold, prices fall, and the profits of importers dwindle away. In the end more of our commodities become cheap enough to export; and so the balance between exports and imports is restored.

There are men who hold that the United States should endeavor to increase its exports, but systematically discourage importation. It is obvious that such a policy would be futile. If our exports increase, our imports will necessarily increase also, and *vice versa*. The fluctuations in the price of foreign exchange, and the effects of influx or efflux of gold, insure this result. Exports and imports are indissolubly united by natural law; governments can destroy both, but no policy can be successful which aims to foster the one while persecuting the other.

CHAPTER XIX

THE REGULATION OF INTERNATIONAL TRADE

Since early modern times a great part of the energies of governments has been expended upon the regulation of international trade. The reasons for such regulation have been twofold. In the first place, there is a deep-rooted belief in the people of every nation that the national prosperity may be furthered by restrictions upon trade with foreigners. In the second place, such trade has long been recognized as a convenient and appropriate source of public revenue. Most modern regulation of international trade is carried on through the mechanism of revenue legislation. We shall therefore give to this aspect of the problem our first attention.

Every government needs large funds for the maintenance of the numerous corps of officials and servants making up its civil and military establishments and for the meeting of other expenses incurred in the discharge of its various functions. These funds must be obtained chiefly through taxation. Two methods of raising taxes are open to the government. It may send its officials to each man's house, and levy upon his person or property. In this case it is said to levy direct taxes. The government may, on the other hand, impose taxes upon salable commodities as they are found in the hands of producers or dealers. The latter then add the tax, in whole or in part, to the selling price of the commodities taxed. The buyer of the commodities thus bears ultimately all or the greater part of the tax. Such taxes are said to be indirect.

To most of us the tax gatherer is a most unwelcome visitor. He inquires politely or otherwise into the extent of our possessions; then claps upon us exactions that it may

not be at all convenient to meet. We grumble, but, unless we are bad citizens, we recognize that schools must be supported, streets must be kept in repair, public order must be maintained. For such obvious and imperative public needs we are willing to pay taxes.

But suppose that one of our fellow-citizens, in the hope of bettering his private fortunes, betakes himself to a semi-barbarous country and builds a railroad. A revolution takes place; the new government confiscates his property. Well, we must send a warship, bombard a port, land troops, and perhaps engage in a war costing immensely more than the railroad is worth. Now, if the tax gatherer came around to you and to me, and compelled us to contribute directly to the expenses of the affair, we should probably raise the question why the man who embarked his fortunes in such a venture did not do it at his own risk, not at ours, since he left his country for his own profit, not for ours. This would of course be reprehensibly unpatriotic; but direct taxes are a heavy strain upon patriotism.

With indirect taxes the case is very different. Whenever you buy a pound of imported sugar (and most of our sugar is imported) you pay a tax. Whenever you buy English woollens or cottons or French silks, you are taxed. If you use tobacco in any form, or spirituous, malt or vinous liquors, you pay taxes. And so with a host of other commodities. How great is the aggregate yearly sum that you contribute to the Government in indirect taxes? You probably have not the least idea. But this is certain; if the entire amount were collected from you in cash at one time, you would feel that this Government of ours is an expensive luxury. Statesmen would find much greater difficulty in convincing you that we should have the greatest navy afloat, or that we should hold ourselves in readiness to enter upon a \$2,000,000,000 war over a \$200 matter.

For the ambitious purposes of a central government, then, indirect taxes are vastly superior to direct taxes. And

of indirect taxes, those levied on foreign trade are the most convenient. All foreign goods must cross the national frontier, where there are always officials and soldiers whose services can be employed in preventing goods from being secretly carried into the country. A few points through which such goods must pass may be designated; a comparatively small body of officials may be stationed at these points, to levy and collect the taxes. The foreign merchant may protest against what seem unduly heavy exactions, but the protests of foreigners never make a government unpopular. If on the other hand we levied a tax on the product of a domestic industry—say sugar—we should meet with much greater difficulties. An official would have to be stationed at every point where sugar is made, to see that the manufacturers did not defraud the revenue. Minute regulations of the process of manufacture might be necessary, to the same end, and these would restrict the liberty of the producer and check the progress of the industry. Small establishments might have to be discouraged, to avoid excessive costs in collecting the revenue, and this would mean discrimination against our poorer citizens in favor of our richer ones. If the tax were heavy, manufacturers would complain that their business was ruined, and this would weaken the position of the political party responsible for the imposition of the tax. It is, therefore, easy to see why we have few indirect taxes on production, and these limited to commodities that are regarded as deleterious (tobacco, spirituous, malt and vinous liquors), while our taxes on imported commodities are innumerable.

Another reason for the popularity of taxes on imports is that many persons believe that such taxes are borne by foreigners. If we tax British woolens, French silks and German sugar, are we not compelling the British, French and Germans to help pay the expenses of conducting our Government? Only in minor degree, if at all. Let us say that a given grade of woolen goods is produced in Eng-

land at a cost of fifty cents a yard. Under the laws of competitive industry, the cloth sells in England for very nearly fifty cents. If the cost of bringing it to this country is one cent a yard, and there is no tax on imports to pay, the cloth will sell here for about fifty-one cents. Now if we place a duty of fifty cents a yard on the cloth, none of it will be sold here for less than the British price plus the cost of transportation plus the tax, or a dollar and one cent. The man who buys the goods for use pays the tax, in the last instance. And so with most import duties. There are exceptional cases in which the whole amount of the duty cannot be added to the original price of imported goods. In these cases the foreign producer may be said to bear part of the tax. As a general rule, however, the consumer of the goods pays the tax, although he may not be conscious of the fact.

Taxes on foreign trade may be levied upon either imports or exports or upon both. Export taxes are generally unpopular, because of the common belief that it is a good thing to export as many goods as possible. In the United States export taxes are prohibited by the Constitution. We shall therefore confine our study to taxes on imports.

Taxes on imports may be levied either for the purpose of obtaining a revenue or for the purpose of discouraging importation. Before the annexation of Porto Rico all the coffee used in the United States came from foreign soil. A tax (or "duty") of, say, five cents a pound under the conditions would have discouraged importation in only a slight degree. Most of us would have used as much coffee, even at the higher price. A duty of \$20 a ton on steel, on the other hand, would practically prohibit the importation of steel. For our own steel industry can produce steel almost as cheaply as that of any foreign country. Suppose that we can produce steel at \$15 a ton while in some foreign country it can be produced at \$12. If the cost of bringing steel from the foreign country is \$2 a ton, foreign producers

can sell steel here at lower prices than our own producers can afford to take. But if foreign steel is compelled to pay a duty of \$20 a ton, none of it can be sold here, unless the American producers combine and force steel up to the price of \$34 a ton. Such a duty, since it "protects" domestic producers against foreign competition, is known as a protective duty.

All duties levied upon imported goods of a character that cannot be produced in a country may be classed together as pure revenue duties. All duties levied on goods of a character that can be produced in a country are protective duties. Of course a duty the aim of which is the raising of revenue may be incidentally protective. Thus if we were to levy a duty on imported coffee, it would "protect" the coffee growers of Porto Rico. On the other hand, protective duties may incidentally yield a revenue. In the case employed above, if the duty on foreign steel had been \$1 instead of \$20, foreign steel would have continued to be imported, and thus a revenue would have been obtained. At the same time the foreigner would have been prevented from underselling the American; accordingly, the latter would have been "protected." Most of our duties are protective, but incidentally yield a revenue, as they are not high enough to prevent importation altogether.

The schedule of all duties levied by a country is known as the "tariff." A tariff consisting of duties whose main object is the raising of a revenue is known as a revenue tariff. Such a tariff has long been in force in England. A protective tariff consists mainly of duties whose purpose is the protection of domestic producers against foreign competition. Such a tariff has been in force in the United States since early in the nineteenth century; its character has been most strongly marked since the Civil War.

A revenue tariff needs no defense. A state must have revenues, and there is no easier way of collecting them than through import duties on commodities that we cannot our-

selves produce. A protective tariff, on the other hand, requires more extended consideration. It is designed to foster domestic industry at the expense of the business of importation. Whether it does this or not is a question of great importance. We must see exactly how such a tariff affects, not merely isolated branches of industry, but the industry of a nation as a whole.

There is a very primitive view, unfortunately yet far from extinction, that it is an evil thing to buy anything from foreign producers—even the things that cannot be produced in the country at all. Those who hold to this view imagine that we must send abroad money to pay for all purchases, and money, they say, should be kept at home. We saw in the last chapter that the medium through which international payments are effected is, in a vast majority of cases, bills of exchange. The shipping of gold from country to country is reduced, by the mechanism of exchange, to very small proportions. Now, the bills of exchange with which we pay for our imports are really due bills, representing the value of commodities that we export. We saw also that if a country for a time imports more than its exports will pay for, bills on foreign points rise in price, and this discourages further importation and encourages further exportation, until the proper balance between imports and exports is again restored. Accordingly, we may cheerfully proceed to import as large a volume of commodities as we may desire. We shall not thereby run the risk of a serious drain upon our money supply; we shall merely make preparations for an unusually large and profitable export trade in the near future.

Some men who have advanced beyond the view that all importation of commodities is an evil yet cling to the belief that importation from countries that do not buy as much from us as we buy from them is to be discouraged. They argue that such trade must leave a balance which we must pay in gold, and this they regard as a net loss. Not

many years ago one of the administrative departments at Washington published a report containing the statement that our losses from trade with South America, during the last half century, exceeded the cost of the Civil War. For we had purchased from those countries billions of dollars' worth of commodities in excess of their purchases from us. Of course, the facts in the case are not that we have sent billions of dollars in gold to South America, but that we have paid the balance in bills on England. England buys more from us than she sells to us, and in her turn, sells more to South America than she buys from that region. If ever the import trade with South America assumes abnormally large proportions, the export trade with England expands in sympathy. It makes not the slightest difference whether our foreign trade is three-cornered, as in this case, or whether it is carried on directly with one other country.

Slightly less shallow is the view that one should not buy from foreigners commodities that he can obtain from his fellow-citizens, even if the latter demand higher prices than foreigners are content to receive. If you wish to buy an automobile, it is urged, you should buy one of American make, even if you can get as good a one of French make a little cheaper. By so doing you will increase the prosperity of the American automobile industry. You will enable the industry to employ more men at higher wages, and to pay higher dividends to those who have invested their capital in the industry. That you and the rest of your class may be sure to lend your aid to the American industry, the Government should place a tax on French automobiles imported into the country, which, added to the original price, will make them sell at higher prices than those made in this country. If you then persist in encouraging French industry instead of that of your own country you will have to pay dearly for the privilege.

The ulterior effects of a policy that compels American buyers to patronize the home industry are no less happy (so

runs the familiar argument). The laborers and capitalists, being more prosperous, have more to spend on products for their own use. The capitalists erect mansions and the laborers build cottages, and this creates employment for carpenters, masons and other craftsmen in allied trades. These in turn have more money to spend, and increase their purchases of clothes, provisions and other articles of use. And so the beneficent effects of confining one's purchases of automobiles to the American industry are widely distributed throughout society.

In a similar way it is urged that we should buy all our sugar from our own producers. There is not much doubt that in ten years we could extend our production of sugar sufficiently to cover the demand for it, if we would but pay a sufficiently high price to tempt labor and capital into the industry. Instead of sending \$100,000,000 abroad to fructify foreign industry, we could keep it at home among our own workingmen and capitalists.

Let us see whether the foregoing argument will bear close examination. Assuming that we import \$100,000,000 of sugar in a year, how do we pay for it? Not with gold, but with bills of exchange representing the value of commodities that we export.

Now suppose that we place so high a duty on sugar that importation ceases altogether. The immediate effect would be a reduction in the demand for foreign bills aggregating \$100,000,000 per annum. Bills would, of course, fall below par; men exporting wheat and meat and cotton would get less for their products in consequence. The importation of commodities other than sugar would be stimulated, as we have seen, by the low price of bills. Exports and imports would have to be brought to a balance again, and this would come to pass through a shrinkage of exports and an increase of imports other than sugar. Perhaps we would buy annually \$50,000,000 more of these other imports than we did before, and export \$50,000,000 less of

wheat, meat and cotton than we formerly exported. The producers of sugar are indeed benefited by the elimination of foreign competition, but the producers of wheat, cotton, etc., are injured by the reduced prices of exports, and the producers of other commodities, part of the supply of which is imported, are injured by the increase in importation of those commodities. Obviously enough, the evil ulterior effects of the losses of these two classes of producers cancel the beneficent ulterior effects of the gains of the sugar producers. The one effect of the duty that stands out without any corresponding offset is that we shall pay ten cents a pound for sugar instead of five—certainly a result that no one can ardently desire.

But suppose that the Government places prohibitive duties on all imports. Will not this place all industries in a position where they may enjoy higher prices? And in that case, will it not be as easy for us all to pay ten cents a pound for sugar as it now is to pay five? A protective system, it is often said, is unjust when it singles out a few industries and grants them special favors. But it is just if it favors all industries equally.

An obvious objection is that if this were possible, if each industry were enabled to charge prices one hundred per cent. higher and each person, accordingly, received twice as large an income as he would otherwise have received, no one would secure any real benefit at all. If the income of each of us should be doubled, and we had to pay twice as much for everything that we buy, none of us would be any better off than we are now. But a more serious objection is this: no protective policy can raise the prices of all commodities. A duty can affect the prices only of articles that we are in the habit of importing. Now, if we import anything, we must export something to pay for it, and the export commodities must ordinarily represent as great a volume of value as the import commodities. In the case of the United States, the volume of export commodities

must be greater than that of the import commodities, for the former must pay interest on capital that we have borrowed and the cost of transporting our trade in foreign ships.

Now, the price of a commodity that we export must be lower in this country than in the countries to which it is sent. The prices of wheat and cotton in America must be less than the prices of the same articles in England, since we are constantly exporting them. It is manifestly absurd to suppose that by placing duties on wheat and cotton imported into the United States we can raise the price of those commodities. Who will wish to import them into the United States? The duty on any export product is utterly ineffective.

We have seen that restrictions on imports restrict exports also. They do this by reducing the amount of money that the producer for export receives for his goods. An "all around" system of duties, in spite of itself, imposes a positive burden on as large a volume of industry as that which enjoys special favors under it.

Another argument for protective duties runs as follows: The American laborer requires a greater measure of the necessities and comforts of life than the laborers of any other country. His wages must therefore be higher. It follows that American enterprisers, having higher wages to pay, are at a disadvantage as compared with their foreign competitors. They must therefore sell their goods at higher prices; and this they would be unable to do if the foreign producer could bring his goods here without payment of duty. From this point of view the tariff is regarded as the bulwark of the American standard of living.

This argument can no more bear analysis than the preceding ones. All the export industries are able to pay the American scale of wages, and yet undersell their foreign competitors on foreign soil. These industries are hampered, not aided, by the protective system. Apart from the injury inflicted upon them by an unfavorable rate of exchange,

these industries are rendered less profitable by the fact that many of their expenses are increased by the tariff. Wheat and cotton growers are compelled to pay higher prices for agricultural implements, lumber, fertilizers and other supplies because of the protective duties. The duties on iron and steel increase the costs of railway building and are reflected in higher freight rates, which represent a deduction from the net gains of the producers of the commodities that are carried to the ports by rail. If restrictions on imports reduce the amount of freight carried to this country from Europe, many ships will be compelled to cross the ocean in ballast to carry away our exports; and this means that the exports will have to pay ocean freights covering the costs of a return voyage, instead of a single passage of the ocean. Now, when we consider that in spite of all these disadvantages the export industries can retain the home market and invade foreign ones, we see clearly that a protective tariff is not needed to maintain the American rate of pay in all industry, although it may be necessary to maintain that rate in special industries—industries in which our advantages for production are less telling than they are in those industries that have succeeded in conquering a place for themselves in foreign markets.

In order to obtain a clear view of the relation of a protective duty to the rate of wages we must return to fundamental principles. In any country, as was shown in earlier chapters, wages are determined by the marginal productivity of labor. We will represent the various opportunities for employment that a country like the United States affords by the symbols A, B, C and D. A may stand for a group of industries in which we have exceptional advantages over foreign countries. B stands for a group of industries in which our advantages are less, C one in which they are still less, and D the group of industries in which they are least of all. When our population is so small that all our labor can be engaged in the group represented by A, wages

will be at their maximum. When our population increases so that some of the labor will have to be set at work in group B, the wages of all labor must decline to the level of productivity in that group. We will suppose that population has increased up to a point where the opportunities represented by A and B are fairly well manned, and wages are determined by the productivity of labor in B.

With wages thus determined, it is clear that no employer, without governmental aid, can afford to hire labor to exploit the opportunities represented by C and D. This would necessitate paying labor in C and D as much as it produces in B, and that, by hypothesis, is more than it produces in C and D.

Now let us suppose that a political party is in power which holds the belief that we should produce everything that we consume—that is, that the opportunities represented by C and D should be exploited as well as those represented by A and B. Labor must be drawn away from A and B and set at work in C and D. This involves the necessity of compensating enterprisers in some way for the disadvantages under which they will labor in C and D. Either wages must be reduced in A and B, or some form of subsidy must be granted to C and D.

The commodities that the industries composing C and D will produce have been hitherto, we assume, obtained from abroad through exchange for commodities produced by A and B. The Government now renders this difficult by placing high duties on the former class of commodities. This means that producers in the groups A and B—both employers and workmen—must pay higher prices for what they buy. They do not receive higher prices for what they sell; in fact, they receive lower prices, as this, we have seen, is the effect of protective duties on export industries. It appears, then, that part of the disadvantage of producers in C and D is removed by reducing wages (estimated in purchasing power) in A and B.

After the duty has gone into effect and the prices of commodities that can be produced by C and D have risen sufficiently, enterprisers will be able to hire labor at the wages prevailing in A and B, and establish industries in C and D. So far as the remaining laborers in A and B buy the products of C and D, the difference between the price which they pay for those products and the price that they would pay if they were permitted to import those products duty-free is a tax paid not to the Government, but to the producers in C and D, to enable the latter to remain in business. It is an uncompensated deduction from the natural earnings of the laborers in A and B. Their wages have been reduced; nor are the workers in C and D paid as much, estimated in purchasing power, as they would have received if they had been allowed to remain in A and B under the earlier conditions. The net effect of the imposition of the duty has been to saddle the self-supporting industries, A and B, with the support of the pauper industries, C and D. Yet the inventors of this policy will have the effrontery to tell laborers in A and B that this policy is the bulwark of their high rate of wages!

The principles involved in the illustration may be stated in the following general terms: Wages in America will be at their highest point when all our labor is concentrated in the industries in which our relative advantages over other countries are greatest. If there are no protective duties whatsoever, employers will, as a rule, seek out the industries in which we have the greatest relative advantages. Protective duties enable other industries to exist, but only through taxing the more productive industries for their support. Protection as a permanent policy means a slight reduction of money wages, and a greater reduction of wages estimated in purchasing power. Instead of a bulwark of the American standard of living, protection is a serious menace to it.

The arguments for protection that have been discussed

are all manifestly fallacious. They are not therefore to be despised, since to hosts of men they appear to be absolutely irrefutable. And this, as a great French economist was wont to say, is because the average man is unable to weigh the unseen effects of an economic policy against the effects that are seen. If we place a high duty on imported fabrics, the resultant high prices enable a new industry, employing thousands of workmen, to be established. This is the effect that is seen, and considered in itself, is wholly good. Every purchaser of the fabrics throughout the land is compelled to pay higher prices for them; but this effect is only dimly seen, if at all. In itself, it is wholly evil. Since part of what the new industry receives in this way from the public goes to compensate that industry for the natural disadvantages under which it labors, it follows that the aggregate net gain to the industry is less than the aggregate net loss to the public. Again, the national production of wealth is increased by the amount that the new industry adds, and this effect of the duty is one that is seen. The national production is reduced by the amount that the labor and capital diverted to the new industry would have produced elsewhere; but this effect is not seen. Yet the reduction in national production that the duty entails is greater than the increase due to it, since labor and capital are diverted from the branches of production enjoying greater natural advantages to branches enjoying lesser advantages—a fact proved by the very need for a duty.

In the foregoing discussion the assumption has been made that when left to themselves enterprisers will seek out the industries enjoying the greatest natural advantages. On this assumption, all that government can do is to force industry into the less productive fields—a policy that can result only in reducing the national production.

Now, while the assumption is ordinarily defensible, it is not universally valid. Enterprisers do not always know what fields offer the highest rewards. Furthermore, even if

an enterpriser suspects that a given field, hitherto unexploited, would offer rich returns, conservatism may deter him from abandoning a field in which he is already gaining profits for a field in which he may gain larger profits, but in which he may also incur losses.

The men who govern a nation may be more far-sighted and more progressive than the business men of the same nation. The former class of men may become convinced that certain fields of production will be profitable long before the latter class will venture into those fields. The government, by placing duties upon the products that those fields might yield, makes success a certainty. Once the new industries are established, the duties might be removed without destroying them. The industry of the nation is enriched by the addition of fields of employment that are as good or better than those already under exploitation.

It must, of course, be borne in mind that this case is a rare one. It is not often that the statesman knows more about business than the body of business men themselves. Where, however, the government is manned by officials of a race intellectually superior to that of the governed, the national industry might be furthered in the way described.

Even when there exists no superiority of foresight on the part of those who make up the government, a government may often succeed in diverting industry from fields in which the natural advantages are less to fields in which they are greater. The United States has always possessed special natural advantages for the production of iron and steel. What it lacked, in its early period, was training in the art of working metals. The enterpriser was unacquainted with the best processes, and he had to use labor that had not acquired the skill and the traditions necessary for efficient production.

Now, the only way to acquire an art is to practice it. We had to make iron for a long time before we could become

adepts in the art. A generation might have sufficed for establishing the industry in a particular locality; but what enterpriser would have undertaken to produce at a loss through a generation in order that some other enterpriser might ultimately conduct the business with a profit? Obviously, the case demanded governmental aid. And the Government did indeed come to the aid of the industry, through the imposition of duties on imported iron and iron wares.

A generation may suffice to establish the industry in a given locality, but if the production of iron in other localities promises ultimate success, the duties must be continued for the benefit of these localities. At a time when the first center of the industry is in a position to bid defiance to foreign competition, other centers are still in extreme need of protection.

To-day our iron and steel industries are highly developed. There is excellent reason for believing that in many sections of the country these industries could get on very well without the protection they continue to receive. In other parts of the country the industry may still be in need of protection. Now, is it expedient to continue protection as long as any part of the industry needs it? To do so is to enable those parts that are already able to stand without aid to levy upon the rest of the industry of the country.

After an industry has been well established within a country, it migrates without great difficulty to other parts of the same country, if natural conditions warrant. If the iron industry has been established in Pennsylvania, it will readily migrate to Alabama or Colorado, if natural conditions are as good or better than they are in Pennsylvania. Processes that are in use in Pennsylvania can be transferred without cost to the other regions; a body of workers can be induced, without great difficulty, to migrate with the industry. There is accordingly far less reason for giving governmental aid to the newer centers than there was for giving it to the

original one. Accordingly, we may say that it may be advantageous to protect an industry until it is well established within the national domain; if it is of a character that fits it for existence there, it will extend itself to other regions even if protection is withdrawn.

When an industry has become firmly established, further protection is inexpedient and unjust, as it enables the industry to collect from other industries that are self-supporting a tribute that it does not need. Here a practical difficulty arises. How can we determine just when an industry has passed through the period of infancy, and therefore should be left to shift for itself? We cannot find out from those who are engaged in the industry, since they are naturally desirous of a continuance of public aid, even though they do not need it. And those who are not engaged in the industry cannot tell.

At the annual banquets of the various manufacturers' associations, the boast is frequently made that we can manufacture more cheaply than any other nation on earth. But if Congress proposes to reduce duties, the same men soberly declare that our industries will be ruined if this is done. And shall Congress, in its search for truth to enlighten it, appeal from the manufacturers sober to the manufacturers off their guard and intoxicated with success? The fact is, it is almost impossible for a government to determine just when a protective duty can be removed. As a result every nation retains many such duties long after they have lost all efficacy for doing anything but harm. Accordingly, there is good reason for the view that reckless experimentation in the establishment of new industries is to be avoided.

A stronger reason for cautious action lies in the fact that an industry established by the aid of a protective duty may never develop sufficiently to maintain itself without governmental aid. The natural conditions upon which it is based may be so unfavorable, relatively to the conditions in other countries, that the industry, if established here, will

be destined to remain forever a burden upon the public—a pauper industry. Let us suppose that in a given branch of industry a commodity can be produced here at a cost of \$1, while it can be obtained from abroad for fifty cents. Without government aid, no enterpriser can afford to undertake its production. Now, let us assume that a statesman, anxious to see the United States producing every possible kind of goods, succeeds in placing a duty of fifty cents on the imported article. The price to consumers must then rise to \$1, a price sufficient to induce American enterprisers to produce the goods.

After all the initial difficulties, such as training a force of men, establishing market conditions, etc., have been overcome, the cost of producing the article may fall to seventy-five cents, and remain there. This is the natural American cost of it. If the duty is removed, the foreign article will again be sold for fifty cents. The men who have put their capitals into the industry will have to close down their plants and discharge their workmen. The buildings and machinery used in the industry will probably be worth almost nothing for any other purpose. The skill acquired by the workmen, at great cost of time, perhaps, will be equally worthless. The removal of the duty, therefore, involves the ruthless destruction of means of wealth production, through no fault of the possessors of such means.

The question naturally arises, is it right to call an industry into existence by governmental action, and later abandon it to the mercies of foreign competition? There can be but one answer: It is not right. The government did wrong in calling into existence an industry that would never be able to survive unaided. It does wrong again when it abandons its ill-begotten offspring to die of starvation. If, however, the industry is not abandoned, it is a perpetual expense to the self-supporting industries of the country. A human pauper dies in the end, but a pauper industry may live on forever.

A protective tariff may sometimes be defended on the ground that it preserves the natural resources of a country against wasteful exploitation. If the Government does not restrict international trade, we may, as a rule, assume that enterprisers will seek out the fields in which a given quantity of labor and capital will produce the largest amount of value, or the fields in which our advantages over foreign countries are greatest. Let us suppose that one of those fields is the growing of wheat. In most parts of the United States wheat culture represents a heavy drain upon the fertility of the soil. Land devoted to constant wheat cropping becomes almost exhausted in a generation. Accordingly, when one sells a bushel of wheat, he sells not only the product of his labor and capital, but a part of the natural heritage of his country. But why should he care? After his field is worn out, his years will probably be few. The next generation may be left to repair the wastes of this generation.

Let us suppose that coal and iron mining and the production of petroleum are other industries in which we have great natural advantages. Enterprisers, if left to themselves, would employ vast amounts of labor and capital in exploiting these natural resources. Every year we should send away from our country these commodities, representing not merely the annual product of our labor and capital, but also a part of our irreplaceable natural wealth. In a few generations we should be, as a nation, impoverished.

We have seen that protection places a burden upon the industries in which we have, for the present, great natural advantages, in order to build up industries in which our natural advantages are less. If the industries that are naturally most productive are of the kind that waste the natural wealth of the country, it is a statesman's proper policy to impose upon them such burdens, and so reduce the extent to which they are carried on, in favor of industries which involve no waste of resources, even though the annual production of wealth is thereby diminished for a time.

The same argument, of course, condemns protection under other circumstances. According to conservative official estimates, we are using up, each year, four times as much lumber as we are growing. The rising price of lumber stimulates the activity of the woodsman to greater and greater remorselessness. Our mountains are denuded, and the waters, formerly held back by the forest covering and allowed to feed the rivers with regular flow, now sweep down the slopes in devastating flood. Obviously, we should endeavor to stimulate importation of lumber; if necessary, we should give a bounty on imports, that the price of lumber might be reduced and our few remaining forests saved. But the destroyers of our natural heritage demand protection in their pernicious pursuit, and we accord it to them.

If extractive industries, prosecuted too relentlessly, waste the natural wealth of a country, manufacturing industries, prosecuted in the same way, waste its men. The population of a manufacturing center does not compare at all favorably, in health and vigor, with the population of rural districts. Indeed, it is doubtful whether an exclusively urban, manufacturing population can in the long run escape physical degeneration. It might therefore be good policy in a country so largely devoted to manufactures as England to impose protective duties on imported agricultural products, with a view to increasing the proportion of the population employed upon the land. This would indeed burden the manufacturing population; it would for many years reduce the product of the national industry. But in view of the ultimate effect upon the character of the population, this policy might be a good one from the point of view of the statesman, who must consider not merely the prosperity of this year and next, but also that of the remotest generations.

There are industries that in the end destroy the health of those who are engaged in them. A frequently cited case is a certain branch of the match industry, which condemns its workers to early disability or death. Yet in many coun-

tries that industry asks for protection and gets it. Protection and encouragement to an industry that literally devours one's fellow-countrymen!

A protective duty is defensible when it serves to maintain facilities for the production of articles of national necessity, the supply of which might be cut off by war. War vessels can be built in Great Britain at far less cost than in the United States. In time of peace we should make important savings by having our war vessels built in Great Britain. If we were engaged in a war, however, we could not have warships built in Great Britain, whether that country were hostile or neutral. Yet it is precisely at such a time that we should most need to increase our navy. Prudence therefore demands that we should provide ourselves, in time of peace, with establishments capable of turning out warships; and this involves giving them work to do.

It is a moot question whether the creation of facilities for constructing merchant ships stands on the same footing. In former times, certainly, a merchant fleet was an indispensable auxiliary to a fighting fleet. The former furnished trained seamen, and many merchant vessels were capable of speedy transformation into warships. Modern methods of construction, however, have widely differentiated between merchant ships and ships of war. The former cannot be fitted out in such a way as to enable them to perform efficient service in line of battle. The crews of merchant ships are not such satisfactory material for a naval force as was formerly the case. Whether the national defense requires the development of a sea-going merchant fleet or not is a question for disinterested experts to determine. If it does, protection to the American merchant marine is defensible, despite the cost that it inevitably entails.

Many industries that are not designed directly for the supply of articles of military necessity may be placed in the same class. In order that we may be able to construct ships and produce guns and other instruments of war, we must

have men who are trained in metal working; and if there is no other way of maintaining such a force of workmen, we should create and maintain an iron and steel industry through protective duties. It is, however, to be borne in mind that the maintenance of an industry large enough to cover all the demand for iron and steel in time of peace cannot be urged on grounds of national defense.

There are some writers who extend the principle involved to an unwarranted extreme. They would have every nation produce practically every article that it consumes, in order that in time of war there might not be the least interruption of supplies. These persons exaggerate the dependence of one country upon any other country against which it may at some time wage war. England, every one knows, does not produce enough grain to feed her population. Suppose that England found herself at war with the United States. That would indeed cut off American supplies of wheat and meat and cotton. But there are many other countries that would be glad to provision England at the rates she can afford to pay; and as for cotton, the English buyers would not be a whit worse off than the American sellers, cut off from their natural market.

But suppose that a coalition of all the powers succeeded in destroying the British fleet, and in cutting off supplies from every source. Would not Great Britain be brought face to face with famine? Certainly. But a coalition strong enough to do this would be strong enough to invade and subjugate Great Britain, even if that country were absolutely self-sufficing. Furthermore, any one who knows anything of the history of coalitions knows that none will ever be formed for the purpose of bringing the British nation to extinction.

The strength of a nation in time of war does not depend upon its ability to produce everything that its inhabitants consume. Rather, it depends upon the valor and number of its men, and upon its general wealth. Other things

equal, a rich nation will overcome a poor one in war. Great Britain is formidable because she is rich. Now, the endeavor to make a nation absolutely self-sufficing would end in making it much poorer than it would be if it used its resources in a more economical way. If we were to endeavor to raise coffee and tea, lest an impossible coalition of all the world might inflict upon us the hardships of dry breakfasts, we should waste so much of our energies in the attempt that we should be weakened in the event of an ordinary war, in which we may any day become involved.

One further possible justification of protective duties requires examination. Other countries impose duties upon American products crossing their borders. Therefore, it is said, we should impose import duties on the products of such countries, by way of retaliation. Let us see whether this position is tenable.

If Germany places a high duty on American meats, the persons who are injured most seriously are the German consumers of meat. The German producer of meat gains an advantage, but this, under ordinary circumstances, is not commensurate with the loss to the German consumer. The world demand for American meat is somewhat reduced, and this reduces the price of it slightly. A small injury, therefore, is inflicted upon the American producer of meat.

Now let us suppose that in retaliation we levy extraordinary duties on German sugar. The chief sufferer will be the American consumer of sugar. The American producer will gain, but not commensurately. The world demand for German sugar will be reduced, and this will slightly reduce the price of it. Thus, in order to punish Germany for inflicting a large loss on German consumers and a small one on American producers, we inflict a large loss on American consumers and a small one on German producers.

But retaliation is war, and in war the petty rules of logical conduct are not to be observed. The important question is this: does the policy of retaliation effect its pur-

pose? Will we compel Germany to remove the obnoxious duty? In all probability, no. After the duty on meat has been in force for some time, German producers will increase their facilities for producing that article. To remove the duty and expose to the mercies of foreign competition the men who had invested their capitals in good faith would be a policy as unjust as it would be unpopular. Similarly, American enterprisers would extend their facilities for producing sugar, and this would give them an equitable claim to a continuance of the duty. The only result of retaliation is the institution of permanent protection. If permanent protection is desirable, it should be undertaken without reference to the way in which a foreign government conducts its own affairs. If it is undesirable, it should not be undertaken at all.

In conclusion we may say that protective duties may be defensible (1) when they make possible the introduction of an industry which in a reasonable time will compare favorably in productivity with industries that are already self-supporting; (2) when they preserve the natural resources of a country from wasteful exploitation; (3) when they preserve the vigor and progressiveness of the population through the maintenance of a just balance between manufacturing and agriculture, city and country; and (4) when they make possible the maintenance of industries that add materially to a country's strength in time of war. In any case such duties are a burden upon the national wealth, at the time when they are instituted, and often for an indefinite time thereafter, and whether the benefit to be gained is a due compensation for the burdens involved is a question demanding in each case careful consideration. Duties that are designed to raise wages or to increase the national wealth by the introduction of industries in the prosecution of which we have no special advantages, are founded in a delusion. They are rendered possible only by the fact that the ordinary mind does not weigh their unseen disadvantages against their advantages patent to view.

CHAPTER XX

THE ECONOMIC RELATIONS OF GOVERNMENT

The economic world with the study of which we have been engaged is a world of free private enterprise. Its motive forces are the acts of individuals, each seeking to further his own material interests. When such buy or sell material possessions or personal services, they take little thought of the interests of society as a whole, and are little concerned with the wishes or the will of society. Yet the will of society plays a part in all these transactions, for they are shaped with tacit reference to the law. The individual is free to pursue his own interests only within the limits set by the positive law of the land.

If we attempt to contrast the present economic state with the state that would probably exist were there no political organization of society, we shall realize that the will of society, as expressed in the acts of government (employing the term in its broadest sense), has played an exceedingly important part in economic evolution. Without a government strong enough to assure to each man the permanent possession of material goods acquired in ways recognized as legitimate, humanity could hardly have developed beyond the hunting, or at any rate the pastoral, stage. Without a government able to enforce contracts for the future delivery of goods and services, humanity could not have passed beyond the stage in which the small artisan produced goods, on his own account, for a narrow local market. Progress in the art of government has been a necessary condition of substantial economic progress. On the other hand, it was in large measure progress in economic life that necessitated progress in government. Some of the most serious practical problems of to-day have their origin in the fact that political

evolution has not kept pace with economic. Our political machinery, which developed under simpler economic conditions, is incapable of maintaining justice under the complex conditions of the present time.

A government may limit its economic activities to the defense of private property and the maintenance of the obligation of contracts. It may assume the function of determining the conditions under which economic transactions are carried on, and may even interfere in their terms. It may engage directly in the production of goods and services. In the first case the government is said to pursue a "let alone" or *laisser-faire* policy; in the second case, a regulative or "paternalistic" policy; in the third, a socialistic policy. In general, the basis of modern economic policy is *laisser-faire*. True, the regulation of an industry by government is a not infrequent phenomenon, and the direct participation by government in the production of commodities and services is not by any means unknown. Nevertheless an overwhelming majority of modern economic transactions are carried on by private individuals, subject to no direct interference on the part of the government.

The question may arise whether the existence of protective tariffs in most of the countries of the world does not make it necessary to qualify the statement that *laisser-faire* is the basis of modern economic policy. In effect, the United States Government prevents us from buying English steel, and compels us to buy steel of American manufacture. Yet the method by which it does this does not resemble the method of governmental regulation, to be discussed below. The Government imposes the condition that every ton of steel crossing our borders shall pay a certain tax. This condition met, the steel becomes an article to be dealt in freely. In buying or selling it men consult only their own self-interest. The imposition of the duty creates a steel industry in this country; but the method by which this is done is very different from the method of governmental

production. Prices are enhanced; and this leads individuals, in the pursuit of their private interests, to engage in steel production. The Government, as it were, creates a favorable soil in which free enterprise may flourish. We may, therefore, say that the existence of customs barriers does not render necessary a qualification of the statement that the economic policy of modern governments is based upon the principle of *laissez-faire*, or free enterprise.

The system of free enterprise has been at once the subject of extravagant praise and of savage criticism. Some writers attribute to it all the progress in civilization that the last centuries have witnessed. To these writers every encroachment by government upon the domain now occupied by private enterprise is fraught with grave dangers. Other writers regard the system as wholly corrupt, and hope to see it replaced either by a system under which all economic activities are minutely regulated by government, or by one in which the government itself carries on all production of wealth in behalf of society as a whole.

An exhaustive treatment of these opposing views would carry us far beyond the scope of the present work. We may, however, consider briefly whether the system of free enterprise meets the tests of justice and of social expediency. If it does this in the main, there may yet be a distinguishable field in which individual enterprise should be subjected to governmental regulation, and yet another field in which the government should participate in the production of wealth. A part of our task must be to find the boundaries of the respective fields, if such boundaries really exist.

We may first inquire whether the existing system tends toward justice from the point of view of those who direct production, the class of enterprisers. Any enterpriser may engage in any branch of production, and create and sell wares to his best advantage. Any enterpriser may make a calculation of costs and prices in the various branches of production. If prices are high in any one field, relatively

to cost, new enterprisers press into the field; the supply of the commodity is increased, and its price falls. It follows that there is a tendency for the various classes of goods to exchange, one for the other, in proportions corresponding with their respective costs of production. When this point has been reached, justice, as between different enterprisers, has been established.

At any given time, it is true, some enterprisers receive greater rewards, in proportion to their outlays, than others. But if competition is free, this can happen only when not enough of one commodity is produced and too much of another. The high rewards given to enterprisers in the one field are an inducement to the expansion of production in that field; the low rewards in another field give warning that less of the product of that field is wanted by society. The unequal treatment of enterprisers is the means by which society compels them to direct their forces in such a way as best to meet society's needs. The inequalities are salutary in their effects; when there is no longer an improper distribution of productive energies, they cease to exist.

In a similar way, the system of free enterprise tends to establish justice as between different classes of workmen. If in any industry wages are above the average, due allowance made for relative agreeableness and safety of employment, labor tends to flow into the industry from industries in which wages are below the average. Wages fall in the former industry and rise in the latter. The initial inequalities in wages signified that there was too much labor in some fields, too little in the others, and the very fact of inequalities of reward helped to correct this condition. Justice is done as soon as social expediency permits. Similarly, there is a tendency toward equality of rewards for invested capital.

Can it be said that the system of free enterprise insures justice in the relations of enterprisers, capitalists and laborers with one another? There is no way of weighing the sacrifices undergone by those who direct industry against

the sacrifices of those who furnish capital and of those who labor. We can, however, weigh the services to society of the respective classes; and we can say that there is a tendency for rewards to proportion themselves to services. This is not exactly equivalent to saying that the distribution thus based on services is just. For how came the millionaire into a position where he can serve, as it were, by proxy, his millions bringing him great rewards, while the laborer, serving in person, receives but an insignificant return? From the point of view of social expediency, however, it seems more plausible that a distribution based on service is satisfactory. Assuring to the capitalist the fruits of his capital encourages the formation of new and greater capitals, and these are powerful instruments for increasing the social production and hence for improving the economic condition of all.

An economic system based upon free contract will be just and socially expedient only when the parties to each contract stand on a footing of substantial equality. In the first place, the buyer must know the properties of the goods offered to him as well as the seller knows them; the laborer must know the risks and inconveniences attaching to a given employment as well as the employer knows them. When an unscrupulous horse dealer foists upon an unsuspecting buyer an animal with a hereditary taint of character or defect of body, the social welfare is in some degree reduced. The seller receives wealth, not for his services, but for his rascality; the buyer parts with his money, not for utilities, but for "experience." If all trade were of this nature, as it was among the ancient Greeks, we should, like the ancient Greeks, regard trade and piracy as twin callings.

In the second place, the buyer must be in a position to deal with any one of several sellers, each acting independently of the others, and the seller must be able to offer his wares to any one of several independent buyers. The laborer must have the option of selling his services to any one out of a number of independent employers, and the employer

must have the option of selecting from among a number of workmen. In other words, competition must exist on both sides. Otherwise the seller or the buyer, the laborer or the employer, is in danger of being forced to accept terms that are manifestly unfair. And this can issue only in the discouragement of production, and hence in economic decay.

Of the two conditions stated, the latter—the existence of competition—is the more important. If competition is active, the seller of wares will point out their good qualities, and his competitors will point out their bad ones. Even an ignorant buyer is thus in some measure protected against injustice. When one party to a contract has no competitors to fear, knowledge on the part of the other party is of little avail. There is a certain town which I can reach only by traveling over a particular railway line. The line is in very bad shape; the ties are rotten and the rails are light; the cars are old and unsanitary. Travel on this line involves an unduly large measure of danger and discomfort, and I know it. Yet I must buy tickets over the line, because I have no alternative.

Now, if there were merely sporadic cases in which contracts are made under conditions that make possible a wide departure from fairness, there would be little need for governmental intervention. But when there is an extensive field in which such conditions prevail, the need for governmental intervention becomes imperative. The government must regulate the conditions and terms of economic contracts when its failure to do so results in substantial injustice.

In early times the producer and the consumer were, as a rule, neighbors. The tailor and his customer lived in the same village. If then the tailor worked under unsanitary conditions, the customer had a chance of knowing it. If the tailor substituted inferior materials, trusting to the customer's ignorance, the deception was likely to make itself known in the wearing of the garments, and react unfavorably upon

the tailor's business reputation. Fair dealing, under the circumstances, was a prerequisite of business success, and the man who dealt dishonestly sooner or later reaped the due harvest of his misdeeds.

To-day the man who makes your clothes may live a thousand miles away from you. He may be suffering from a mild attack of smallpox as he works upon your garments. You cannot see the danger that lurks in them. The milk that you drink may come from a dairy one hundred miles away, where no attempt is made to prevent its contamination with the germs of disease. The appearance of the milk gives you no warning of the fact. Patent medicine manufacturers may for years have supplied you with remedies containing dangerous amounts of opium; packing houses may have furnished you with meat treated with preservatives that undermine your health. Only an expert can tell you whether this is true or not; and you can probably ill afford to employ a corps of experts to investigate the hidden qualities of the things you buy.

The workman in a large factory is in a similar position of helplessness. He cannot estimate the degree of danger that unfenced machinery represents. He cannot tell whether ventilation is adequate, or whether dust and noxious gases are properly disposed of. Furthermore, he is often unable to judge correctly as to the number of hours that he can toil daily without undermining his health.

Not less significant than the separation of consumer from producer has been the development of combinations of producers. In many fields, buyers have virtually only one seller to deal with. In this state of affairs, there is no way in which the consumer can enforce a demand for wares of good quality, if wares of poor quality are more profitable. The employee of a monopoly may know that unsanitary conditions prevail in its shops, but he may be unable to find other employment. Furthermore, the prices of monopolized products are almost certain to be unreasonably high, and this

means that the monopolist takes from the aggregate income of society a larger share than his services warrant.

There is, then, a field in which governmental regulation is necessary. (1) The government may be called upon to regulate the qualities of products or of services. (2) It may be called upon to regulate the prices of commodities or services. (3) The government may regulate the conditions under which work is performed. (4) It may regulate wages. (5) It may regulate the relations between the enterpriser and the men who provide him with capital.

Governmental regulation of the quality of commodities was exceedingly common in the Middle Ages. The weight of the loaf of bread, the width and quality of fabrics, were determined by public authority. With the development of modern industry much of this regulation fell into disuse. Competition was permitted to regulate the quality of commodities as it regulated their prices. The mediæval kind of regulation has, however, survived in a few instances, where the retention by a country of a valuable branch of trade forbids individualistic tampering with the traditional standards of quality. The Persian Government endeavors to suppress the use of aniline dyes in the manufacture of rugs, on the ground that the employment of these dyes will ultimately destroy the foreign demand for Persian rugs. The Japanese Government inspects all mattings produced for export, and regulates their quality.

The regulation of the qualities of goods in most modern states has for its chief purpose the preservation of the public health. The use of certain ingredients in foods is forbidden; the use of other ingredients is limited to certain fixed proportions. An attempt is made to insure the production of many classes of goods under conditions limiting the risk of transmission of disease from worker to consumer. No attempt is ordinarily made to protect the consumer against fraud, so long as such fraud does not involve injury to health.

The regulation of qualities is carried farther in the case of certain goods and services furnished by enterprises enjoying a monopolistic position. The quality of gas to be furnished to the inhabitants of a city by a private company is commonly determined by public authority. The service of passenger transportation by street and steam railways is often subject to regulation as to quality. In these cases regulation is often defended on the ground that the enterprises are of a quasi-public nature. But any enterprise which obtains a monopoly of a branch of production is, from an economic point of view, in the same position. If a powerful monopoly controlled the iron and steel business of the United States, there would be no way, except governmental regulation, of preventing the use of ores rich in phosphorus or sulphur in the production of iron destined to be transformed into steel rails. This would be a menace to the safety of all travelers; it would therefore be necessary in the end for government to regulate the quality of steel produced.

There is, of course, a danger that the government may go so far in the regulation of qualities as to check legitimate improvements. By the aid of certain chemicals, wheat flour of a darker color than consumers like may be bleached to a snowy whiteness. The chemicals are admittedly injurious to health; but they are inevitably driven off, either in the process of flour manufacture or in the baking of bread, so that hardly a trace of them can be found in the latter product. Yet there is some public sentiment in favor of prohibiting the bleaching of flour. At the present writing California fruit growers are greatly concerned over an administrative ruling which limits so narrowly the use of sulphurous acid in the curing of dried fruits as to threaten the ruin of the dried fruit industry. In spite of the danger of over-regulation, however, it must be admitted that the principle of regulation of qualities is salutary, and that the scope of regulation is destined to extend itself in future.

Governmental regulation of the prices of commodities

and services was also exceedingly common in the Middle Ages. In modern times such regulation is limited to the field of the so-called quasi-public enterprises. The charges of railway companies, of gas and electric light companies, of telephone and telegraph companies, and even of such petty enterprises as the carriage of passengers in cabs and similar conveyances, are commonly regulated by law. Such regulation is not actually based upon any economic ground at all, but upon the legal ground that the enterprises in question use the public highways, or employ public powers in obtaining rights of way.

From an economic point of view, all the enterprises mentioned except the last ought to be subject to governmental price regulation, because they are monopolies. Without such regulation, a railway company might, if it chose, levy such heavy charges upon the carriage of goods away from and into a particular locality as to destroy the business of that locality and reduce the value of property situated there to almost nothing. If the railway is the only means of transportation from a mining district, by raising rates it could reduce the profits of mine owners to *nil* and force the closing of the mines. It could then buy up the mines at a very low figure, and operate them profitably on its own account. True, this is an extreme case; yet it illustrates very well the evils that an unregulated monopolistic determination of transportation charges would entail.

If a monopolistic combination succeeded in gaining control of the entire iron and steel industry, or of the business of mining coal, its powers for extortion would be as great as those of the railway in our example. What would one give rather than pass a Northern winter without coal? Not all that one has, but a good part of it. If we must inevitably see an extension of monopolistic enterprise, as many believe, it is inevitable that we shall see an extension of the principle of governmental price regulation.

So long as economic organization remained simple,

there was comparatively slight need for a governmental regulation of the conditions under which labor was performed. A large proportion of those who toiled were their own employers, and these could be counted upon to keep their workplaces in tolerably sanitary condition, and to limit their hours of labor and the intensity of their exertion in the degree that considerations of health demanded. Those who worked for wages enjoyed, as a rule, conditions as favorable as those of the workmen who were in their own employ. The advent of the factory system changed conditions materially. Men, women and children were congregated in great masses, under the direct supervision of overseers many of whom were bent upon getting the maximum possible service from the workers under them. Machinery took a place in the productive series, and the workers were forced to adapt themselves to the speed of the machines. Competition between manufacturers led at first to a longer and longer working day, and to greater and greater intensity of effort. The worker, seeking employment, was in no position to stipulate that the working day should be limited to a reasonable number of hours, or that the labor should not be so intense as to be destructive of the health of the laborer.

Society, it is clear, cannot afford to see the vitality of its working classes sapped in an effort to raise to its maximum the annual production of wealth. An individual employer may profitably pursue the policy of hiring a set of workmen, wearing them out in a few years, and replacing them by another set. From the viewpoint of society this policy is as wasteful as it is cruel. The daily exertion of each man should be restricted in such measure that he may live a life of normal length, enjoying the normal number of years of health and usefulness. Where labor involves little strain, a man may work ten hours or more a day without injury to health. Where the strain is great, eight hours may be an unduly long work day.

When laborers are associated in strong unions, they may

be able, without governmental aid, to reduce the hours of labor in the measure that is desirable from a social point of view. Each organization is composed of workers of all ages; and there is a natural tendency to maintain a pace that is not too rapid for the older workers, hence not so rapid as to destroy the physical health of the younger men.

But strong trade unions control only a small part of the economic field. Such associations are especially weak in industries employing large numbers of women and children; and these are precisely the classes that are most seriously injured by long hours of work. Hence it has come to be generally recognized that the conditions under which women and children work in factories ought not to be left to free contract. Hours of labor, for these classes, must be regulated by government.

In almost every modern state some attempt is made to regulate by law the hours of labor of children employed outside of the household. Such regulation has been carried farthest in the states where the system of large scale production has long been established, as, for example, in England. In new industrial states, as in Japan, the regulation of the hours of child labor is only in its inception.

The regulation of hours of labor of women employed under similar circumstances is also a well established policy in the more advanced states. In the United States a serious obstacle to such regulation is found in constitutional provisions, originally designed to secure the liberty of the individual, but now operating in such a way as to obstruct his chances of attaining freedom from industrial slavery. The regulation of hours of labor of men has as yet made comparatively slight progress; the policy is, however, destined to extend its scope in the future.

The regulation of other conditions of employment—ventilation, sanitation, etc.—has encountered comparatively few positive obstacles. The field is, however, so wide, and the work of legislatures so slow, that hundreds of thousands

of workmen are to-day employed under conditions involving needless risk of mutilation and death. Still greater is the number employed under conditions that predispose the worker to disease. Progress in the direction of regulation of such conditions is steady, but dishearteningly slow.

The regulation of wages is a policy very seldom employed in modern times. Doubtless there are many cases in which wages are far below the level of productivity of labor; and in these cases it is manifest that injustice is done. To attempt to fix wages by law, however, is to encounter grave difficulties. If in any industry wages were fixed at a level that seemed to the workers too low, the latter would feel justified in refusing to work. If the level of wages seemed to employers too high, they would feel justified in closing their shops. To force the laborers to abide by the rate determined by government would be to inaugurate an era of universal serfdom. Men would be compelled to work, on terms fixed by others; and this is the essence of serfdom. To force employers to continue production, paying wages that seem to them unduly high, would be to confiscate property. In either case it is likely that economic progress would be checked.

This does not mean that it would not be possible to select certain industries, in which the laborer is most seriously exploited, and establish minimum wages there. If the rate were too low, some of the laborers could seek other employment. If the rate were too high, some of the employers could remove their capitals to other industries. With the shrinkage in the volume of the industry, the price of its products would rise, and this would enable the remaining employers to pay the rate of wages fixed. True, some of the workers formerly in the industry would be left without employment. Some means would have to be found for transferring them to other employments. However this might be, such regulation, limited to a few fields, would encounter no insuperable obstacles, and might result in alle-

viating the distress of some of the most helpless members of society. Some such policy as this has been inaugurated in one of the Australian colonies—with what results, we shall better know after the lapse of another decade.

Regulation of the relations between enterpriser and capitalist, or between borrower and lender, tenant and landlord, has largely fallen into disuse. In modern times the man who borrows capital is usually possessed of some property and of at least an average degree of business capacity. It may therefore be taken for granted that he will not subscribe to terms that are not to his advantage. If a man is willing to borrow capital at ten per cent., there is good reason for believing that the annual use of the capital is worth at least \$10 per \$100. Accordingly, there is no reason why the public authority should interfere in the transaction. Many of our States do indeed have usury laws, limiting the rate of interest that may be paid. But these laws are easily evaded, and may be regarded as obsolete.

Where the enterpriser is a corporate body, as is commonly the case in large scale production, the relations between those shareholders who are actually in control and those whose voice in the management is seldom heard, often require regulation. The small investor in a large corporation is often at the mercy of a circle of large investors, who manage the property in their own interests, not in those of the entire body of stockholders. Something akin to the confiscation of property takes place when the men in control of a corporation undertake a "shaking out" of the "little men." There is probably no class in the United States to-day more in need of governmental regulation than these "little men." In the end, doubtless, regulation will come, and the small investor in a corporation's stock will know whether he is buying property or shadowy hopes; and whether or not he will be permitted to keep what he has purchased.

Relations between landlord and tenant assume the guise of a social problem wherever the ownership of land has

become divorced from its cultivation. Where a small number of large landholders deal with a vast number of small tenants there is often opportunity for the oppression of the latter. The tenant who brings a tract of land into an excellent state of cultivation cannot at any time carry the fruits of his labor away with him. Justice demands that he shall be permitted to retain his occupancy of the land until he has reaped the fruits of his labor. Upon the renewal of his lease he should not be compelled to pay an additional sum for the use of the productive powers that he has himself created. A wise landlord, it is true, will not deal unjustly with tenants who increase the productive power of his land; but not all landlords are wise. The tenant may, in some measure, safeguard his interests by the terms of the contract under which he enters upon his tenancy; but not all the conditions that may arise during a term of tenancy can be covered by a contract. Accordingly, the State, under the conditions assumed, may be called upon to regulate the relations of landlord and tenant in such a way that the latter may proceed confidently with the improvement of the land, knowing that he cannot be deprived of his due reward. No problem of this nature has arisen in the United States. This is due to the fact that it is easy for any energetic cultivator to acquire land of his own. It is quite conceivable that at some future time, when the rising price of land and the resultant concentration of holdings have given rise to a permanent class of tenant cultivators, the regulation of the relations of landlord and tenant will assume great importance.

The foregoing survey is sufficient indication of the fact that the regulative activities of government already cover a wide field; and we have excellent reason for believing that the scope of such activities will in the future be greatly extended. In so far, we are drifting away from an economic system based upon free private enterprise. It cannot be said, however, that the essential nature of the

existing economic system is thereby altered. That system is based upon private initiative; and though the government may restrict the field in which private initiative finds exercise, it does not bind initiative itself. The government may prohibit the production of certain articles. In so doing it warns private enterprise away from a limited field; but there remain other fields open. The government may fix the price at which a certain article may be sold, but this price must be left high enough to tempt private enterprise into the field; otherwise the article will not be produced. The government may prohibit the employment of certain classes of persons, and restrict the hours of labor of other classes. Private enterprise is still called upon to furnish employment, and the conditions may not be made so onerous as to exclude the possibility of liberal profits. A system of regulated enterprise is none the less a system of private enterprise. A range of choice and an opportunity for gain are left open to the enterpriser, and if enterprise is really active, it is forever creating new opportunities beyond the reach of regulation.

It may appear that while the existing system of economic organization is in no danger of subversion through the extension of governmental regulation, it is in danger of being supplanted by a system of governmental enterprise, or a socialistic state. We have already many examples of direct production of commodities and services by the state; and we may predict an increasing number of such enterprises for the future. Must we therefore believe that a time will come when the state will enter all branches of industry, and organize the whole working population as a civil service corps? We shall get some light upon this question from a study of the reasons that have led to the direct participation of government in industry. From such a study we may draw reasonable inferences as to whether or not the same reasons will lead to an indefinite extension of the principle of governmental enterprise.

In some instances, the production of a commodity or a service is undertaken by government solely with a view to securing a revenue. This is the case with the tobacco monopoly of France and of some other countries, the salt monopoly in British India, and a few other public monopolies. The profits of the business take the place of revenues that would otherwise be raised by taxation. The government of France, instead of operating a tobacco monopoly, might levy duties on the manufacture and sale of tobacco. If the policy of a government monopoly is resorted to, the product is sold to the public at a price exceeding cost of production. This excess of price represents the net revenue. Let us say that in a given country the price will be so high as to yield a net revenue of \$20,000,000. Now, the government might place a tax yielding \$20,000,000 on the private manufacture of the article. The manufacturers would add the tax to the price paid by the consumers. In either case the government would get the same revenue. In either case the consumer would bear the burden. Which is the better policy, then, a government monopoly or a tax yielding the same revenue?

Under private enterprise the price of tobacco will be determined by cost of production plus the tax. Say that the aggregate cost of production of all the tobacco used in the country is \$40,000,000. Add to this a tax of \$20,000,000, and the consumers will have to pay about \$60,000,000 for it. Under government enterprise, what will it cost to produce the tobacco? The government can borrow capital at a lower rate than private enterprisers; it is likely to pay higher wages. Laborers in the employ of the government are not likely to work so hard as those in the employ of private persons. Let us therefore say that the production of tobacco costs the government \$50,000,000. To this add \$20,000,000 profit for the public revenues, and the consumers will have to pay \$70,000,000 for what they would have paid \$60,000,000 under private enterprise, subject to excise taxation.

From this example the following principles may be drawn: When the cost of production in governmental shops is greater than the cost in private shops, with a given burden upon the consumer a larger revenue can be obtained by the government through taxation than through governmental enterprise. The cost of production is ordinarily greater in governmental shops than in private shops. There is accordingly little reason for an expansion of governmental enterprise for the sake of obtaining revenue.

The government may assume control of an industry for the purpose of regulating the quality or the price of the product. The assumption by governments of the sole right to coin money is a case in point. Imagine the inconvenience of a currency composed of coins struck by all the private companies that mine gold or silver! Some would be light weight, some heavy; some would have much alloy, some little. Obviously, absolute uniformity, and absolute conformity to well-known standards, are essentials of a currency employed in a modern state. And such uniformity and integrity of quality can be secured only when the coins are issued by an organ of society which regards the interests of society as paramount. Doubtless it costs more to coin money in government establishments than it would cost in private establishments. But this waste is insignificant as compared with the gains from a currency of unquestioned soundness.

A similar reason has led to the nationalization of the railway in many countries, and to a popular demand for nationalization in other countries. If we could be sure that private railways would furnish good service, at equal terms to all, and at reasonable charges, we should never regard government ownership of railways as desirable. But of this we cannot be sure. We have tried regulation, and are still trying it; and it may be that we shall succeed in our endeavors to secure impartial and reasonable treatment of shippers and travelers. If we cannot do this, we shall in the

end make up our minds that the railway is to other business enterprises what the coinage is to other commodities—an essential link in almost every business transaction—and that its social aspects are of paramount importance.

A similar argument applies to the so-called municipal monopolies—street railway transportation, the furnishing of water and light, and the telephone service. If it is impossible to regulate the quality of service and the charges under private management, public management becomes necessary. It is, however, to be borne in mind that such regulation is impossible only when the people are unable to select able and honest officials; and when such is the incapacity of the people, government enterprises stand little chance of being managed efficiently and honestly.

In the foregoing instances, there is no inherent necessity for public operation of industry. In the first case this policy is adopted in lieu of a policy of taxation; in the other cases, in lieu of a policy of regulation. We come now to consider cases in which government enterprise is necessary, because it is the only means of securing certain important utilities for society.

In some branches of industry, practically all the utilities created embody themselves in a concrete form, so that the producer is able to recoup himself for his costs of production through sale of the utilities to those who are to enjoy them. The utilities created by a shoe manufacturer are embodied in the shoes; and the manufacturer can obtain from the user of shoes a price that will compensate him for his expenses. If the consumer will not pay enough to cover costs, the shoes ought not to be made, for there are no utilities arising from their making that the consumer cannot appraise.

We may contrast with the utilities furnished by such an industry the utilities furnished by a lighthouse. These are scattered far and wide over the waters that are rendered safe by the light. They benefit every shipowner whose vessel

sails in these waters ; every passenger for whom the danger of death at sea is thereby reduced ; every shipper, who pays lower freights because of the smaller chance of the foundering of ships. In a year's time the utilities contributed by the lighthouse may far exceed its cost of maintenance. But if you or I were to erect a lighthouse, how would we collect pay for these utilities from the beneficiaries? Clearly, this is no field for private enterprise, and yet it is a field in which labor and capital may produce greater utilities than elsewhere. The government, as the representative of society, can alone afford to exploit this field.

Again, an industry may produce some utilities that are concrete and appropriable, and some that are elusive, flowing freely to persons who cannot be made to pay for them. In a very slight degree this is true of all industries ; but we are concerned only with cases in which this differentiation of utilities is well marked. We may take as an example common school education. The children who receive instruction are the immediate beneficiaries ; they, or their parents, could be made to pay something for it. But all of us who wish a government of officials selected by intelligent voters ; all of us who prefer intelligent and efficient employees to ignorant ones ; all of us who wish to enjoy the products of a rich and varied national production, are the indirect beneficiaries. A great part of the total benefit from educating a child is reaped by persons not connected with him by ties of blood or personal interest.

Now, if the benefit to the child is so great, and so clearly appreciated by him or by his guardians, that the entire expense of education can be met by tuition, we who are also beneficiaries may take our gains gratis. But if this is not the case—and, as a rule, it is not—we should be very short-sighted if we refused to contribute our share to the expense. From a social point of view the benefits of popular education far outweigh the expenses of it ; the expenses cannot in each case be assessed upon the beneficiaries ; therefore the

production of the utilities in question must be undertaken by government.

Another case may now be cited. Near one of our large cities there is an island which is capable of providing building lots for a large population. Until recently comparatively few persons could make the island their home, on account of the uncertainty and inconvenience of passage to the city. A ferry service existed, but the boats were small, old and slow. The owners of the ferry line could not furnish better service, however, because the increase in fares would not cover the increase in expense.

The introduction of an efficient ferry service would have greatly increased the value of land on the island. It would have furnished an outlet to some of the surplus population of the city, and diminished the evils of overcrowding in tenements. These utilities might very well have been of sufficient annual value to offset the increased cost of service. But the private ferry company could collect no charge for such utilities; therefore it could not make the improvement. The city, on the other hand, could very well afford to establish a satisfactory service to the island, since the city as a whole would get most of these elusive benefits, in addition to the fares it would collect from passengers.

It is obvious that the same principle may be extended to a great many enterprises—street railways, steam railways, etc. At any given time most of the utilities produced by such an enterprise as a street railway system may be of such a character that a price can be charged for them. As the city grows in size and questions of transportation assume greater and greater importance, the utilities that are not appropriable increase in number and in value. In the end, these utilities may come to be of such significance that the transit system ought to be managed chiefly with reference to them. In such case public ownership ought to take the place of private ownership.

Now, as population increases the industries producing

non-appropriable utilities, along with those that are appropriable, become more numerous—or, more exactly, the non-appropriable element in utility production becomes more important, relatively to the appropriable element. Accordingly, an expansion of public enterprise, in this direction, seems probable.

One further case in which public enterprise may enter the field of production may here be touched upon. Sometimes private enterprise is not sufficiently daring or skillful to enter upon the supplying of utilities even when there is no obstacle in the way of charging a price for them. The government, if under the control of able administrators, may then increase the social welfare by undertaking production directly. When a country, long habituated to one mode of economic life, is suddenly compelled to adapt itself to new conditions, this superiority of public to private enterprise may manifest itself. In the last half century many enterprises have been undertaken by the Japanese Government, in fields ordinarily left to private business. As a class of enterprisers developed, the control of such business has been gradually transferred to them. When, on the other hand, initiative dies out in a people, owing to the weeding out of the more intelligent and enterprising elements in the population, the government may gradually assume control of production and trade. Something of this nature occurred in the later years of the Roman Empire and in the declining period of Venetian history.

So long as there remains in society a large class of persons possessing enterprise and ingenuity, there is little reason for believing that the extension of the field of public enterprise will really narrow the field of private enterprise. For the boundaries of the latter can be extended indefinitely outward, so long as men have wants that remain unsatisfied. Public enterprise will supplant private enterprise only when the latter has become impotent to direct the supplying of the needs of society.

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